

# STARTLING STORIES



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PUBLICATION

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**THE BLACK  
GALAXY**  
A ROD CANTRELL NOVEL  
By MURRAY  
LEINSTER

—  
**THE LOOT  
OF TIME**

A HALL OF FAME CLASSIC  
By CLIFFORD D. SIMAK

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and is Tired of  
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# STARTLING STORIES

Vol. 19, No. 1

A THRILLING PUBLICATION

March, 1949

## A Complete Novel

### THE BLACK GALAXY

By MURRAY LEINSTER



*Barred from space, Rod Cantrell suddenly gets an unlooked-for opportunity to fight the marauders who threaten the existence of all cosmic life!* 13

## Two Complete Novelets

- THE SOUND OF BUGLES..... Robert Moore Williams 74  
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*Marooned in the past, a party of travelers send an SOS ringing far into the future! A Hall of Fame classic reprinted by popular demand*

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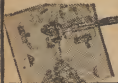
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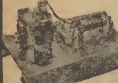
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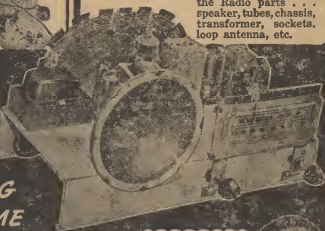


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ONE of the types of futureworld cosmos which seems to pre-occupy a great number of those who read or write science fiction is what might well be called an aseptic civilization. It is a civilization completely controlled by scientists and dedicated to the proposition of one hundred percent efficiency.

Such a development is, we suppose, a dream-world for garbage men. In its highly sterilized purlieu nothing is ever, ever put to waste. Humanity is evolved via the microscope and the incubator. Helicopters, spaceships and baby carriages run upon schedules more immutable than the stars themselves. Agriculture is hydroponics under growth-lamps.

Romance? Well, save for the inevitable hero and heroine (if this concept be in story form) the inmates of this cultural vacuum seem doomed to prefer contemplation of some post-Pareto curve or trans-galactic perihelion to the contemplation of their contemporary Ava Gardners. Sex—a wasteful process since its biological aspects have been eliminated—is replaced by trisection.

### Dream—or Nightmare?

Aldous Huxley, of course, made delightful mincemeat of many aspects of this concept years ago in his *Brave New World*. But too many readers and writers don't seem to be kidding at all when they dream of ultra-efficiency. They really appear to believe that such a civilization could be anything but a nightmare.

The ideal of a scientifically perfect world is, per se, a noble one. Science offers an opportunity for limitless creation to those frustrated souls who lack any talent or aptitude for their creative impulses in the arts. They dream of tilting a couple of test tubes and lifting man to the stars.

But they forget that Albert Einstein also

plays the violin—and plays it well.

They forget that Mussolini won international fame with his boast that he had “made the trains run on time in Italy” while here in America, without any Fascist or pseudo-efficient trimmings, trains have been running far closer to schedule for generations.

They forget the fact that to apply any theory to humanity takes limitless wisdom and patience.

They forget that what is ideal to one man is anathema by instinct, nature and intellectual preferment to tens of others.

### Humans Are Fallible

Being idealists, when they are confronted by what to them seems stupid or intransigent opposition, they tend to regard their opponents as enemies of humanity and, in extreme cases, are capable of plotting to treat them as such. They forget, in the grandeur of their dreams, that they too are human—therefore fallible. They make, or would if they could control things, the classic mistake of Robespierre, that most reasonable and incorruptible of men, whose idealistic efforts to force his dream down the throats of his countrymen wrought a reign of terror that is remembered with horror to this day.

They say, “If human beings would only breed themselves as sensibly as they breed horses or dogs, this would be a better world.”

But they fail to offer, because they have none, any proof that Citation or Man Of War is or was any faster than some stalwart wild horse of the steppes engaged in a dash for prey or life. And they forget that it was men who bred the ridiculously lion-hearted and futile Pekinese.

They mourn the fact that our so-called “upper-level” (whatever that means) families produce not enough children to maintain themselves while the less favored elements of the population breed cheerfully and

(Continued on page 8)

# Over 850,000 people have studied music *this easy way*

SEE HOW SIMPLE IT IS!

"My country 'tis of thee, Sweet land of liberty"



The first note on the music above is "c." Follow the dotted line to the keyboard and locate "c" on the piano. Find the other notes the same way. As you strike them you'll be playing the melody

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famous band leader



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TEG—Mar. '49

# THE ETHER VIBRATES

(Continued from page 6)

in quantity, come war, famine or revolution. They forget that, thanks to Mendel's Law (recently repealed as anti-Marxist by the Soviet government) and inevitable changes of circumstances, it is virtually impossible to breed any strain, good or bad, out of the race.

## The Palomino

As proof of this we need only cite the recent resurrection of the Palomino—the long-lost "golden" horse of the Spanish Conquistadores. Apparently vanished beyond trace for centuries, it has been brought back to full flower within a finger-count of equine generations.

Actually, no matter how progressive it may appear, the restriction in any non-criminal way of the individual is a savage atavism—even in the name of efficiency. Furthermore, and ultimately—the human critter being what he is—it won't work. There are far too many artists, rebels and lovers of change for its own sake among us to permit society to remain long in even the most idealistic social stasis—for which we face Mecca and knock our forehead on the floor to Allah three times.

We believe in the scientific Utopia. It is within our grasp if we have the courage and far-sightedness to grasp it. Limitless power, space-travel, food and comfort for all lie within the possibilities of the next few decades. But they must not be attained by any increase in the already-tragic curbing of individual freedom, even when such individuals appear to be working against the good of the whole.

It's tough—sure—and we stand perilously close to missing out on our great opportunity at present. But if Utopia is to be enjoyed by a race of sheep in human form, it will hardly be worth dreaming about. It won't be much fun.

## Men First, Scientists Second

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(Continued on page 10)

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Thrill. Pict.—March 1949

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## THE ETHER VIBRATES

(Continued from page 8)

could almost reach out and touch, they all knew or know that infinity—even an infinity of riches—is fatal unless it has been taught to and accepted by the hearts and minds of men.

Those who were not so great? Well, we have only to remember Dr. Alexis Carrel and his dedication to scientific efficiency which led him into the Nazi camp. The path of the Benedict Arnold is always lighted by the pale lamp of reason.

The big problem that lies ahead is thus preparing man for Utopia, not the reverse. Nobody in search of a home likes moving into a house already furnished with a "don't move" sign on all of its interior appointments.

It's going to be a job. As to its outcome—well, there is an old Tin-Pan Alley chestnut that goes, "Horses don't bet on People. Horses have too much sense."

They may be right at that.

## OUR NEXT ISSUE

**T**HE featured novel for the May issue is by a newcomer to **STARTLING STORIES**, although his novelet, **FRUITS OF THE AGATHON**, which appeared in the December issue of our companion magazine, **THRILLING WONDER STORIES**, has won him considerable reader interest and acclaim. His name is Charles L. Harness and, in **FLIGHT INTO YESTERDAY**, he has produced what may well be the outstanding science fiction achievement of the year.

Mr. Harness, whose scientific and philosophical lore seem to be as endless in depth as his story-weaving ability is in ingenuity, has written of a future which most of us will probably not want to face but which none of us yet has been able to discard once embarked upon reading of it.

Following the Toybean inevitabilities closely, he pictures an age not too many years removed from the present in which the world is divided into two great control centers, roughly aligned with the hemispheres. It is a world that knows space-travel within the limits of the Solar System, which derives much of its power from sun-

(Continued on page 138)

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# FLOODS BRING TROUBLE TO TOWN BUT THEN...

CALLING KWX, FERNCLIFF!  
EMERGENCY MESSAGE FOR CITY  
HOSPITAL / PLEASE FLY IN 200  
AMPULES TYPHOID VACCINE.  
URGENT / DOCTOR G. EVERTS,  
RIVERDALE. REPEAT...

KWX,  
FERNCLIFF.  
OKAY, WILL  
HANDLE!



THEIR LAND COMMUNICATIONS CUT AND WATER  
SUPPLY CONTAMINATED BY FLOODS, RIVERDALE'S  
CITIZENS ARE UNDERGOING MASS INOCULATION,  
BUT YOUNG DOCTOR EVERTS'S SERUM SUPPLY IS  
RUNNING LOW AND...

RIVERDALE AIRPORT TO PIPER  
237: RUNWAYS FLOODED. LAND  
ON HIGH GROUND BETWEEN  
FLARES, OVER.



HERE'S THE  
SERUM, DOC.  
THIS YOUNG  
LADY...

GOOD! WE CAN USE HER!  
HELP THE SERGEANT  
LINE 'EM UP, MISS!

B-B-BUT...



ONLY FIFTEEN  
MORE, DOCTOR

THANK HEAVENS THAT  
PILOT BROUGHT FIFTY  
EXTRA AMPULES



Eight Hours Later

ME ON YOUR  
NEWSCAST? GOSH,  
I WAS JUST GOING  
HOME AND CLEAN  
UP

DO IT AT THE  
STUDIO, NOW  
TO FIND THAT  
SERUM PILOT

WAIT  
'TILL THE  
DOCTOR  
FINDS OUT  
IT'S ME!



HERE'S A  
RAZOR,  
DOCTOR

THANKS



REMARKABLE  
BLADE! I'VE NEVER  
HAD A MORE  
REFRESHING  
SHAVE!

IT'S A THIN  
GILLETTE...  
PLENTY KEEN  
AND EASY  
SHAVING



YOU FLEW  
THE SERUM!  
WHY...

BUT YOU  
NEEDED  
HELP...

QUIET! TEN  
SECONDS TO GO  
HE'S SO  
HANDSOME



WHEN IT COMES TO FAST, SLICK SHAVES  
AT A SAVING, THIN GILLETTES ARE TOPS.  
THEY ARE THE MOST POPULAR LOW-PRICED  
BLADES ON THE MARKET BECAUSE THEY'RE  
KEENER AND LAST LONGER. THIN GILLETTES  
ARE MADE TO FIT YOUR GILLETTE RAZOR  
EXACTLY... PROTECT YOU FROM  
NICKS AND IRRITATION. ALWAYS  
ASK FOR THIN GILLETTES



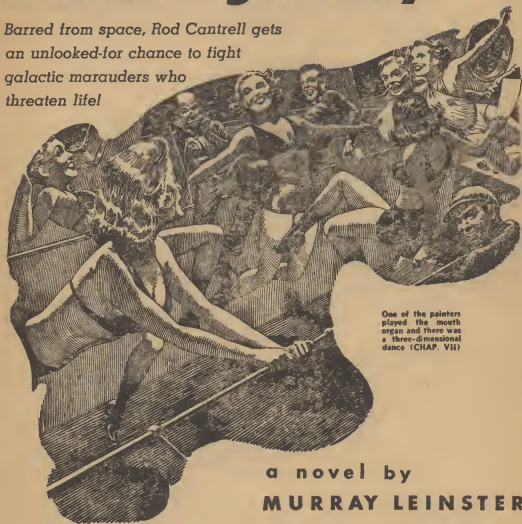
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# the BLACK galaxy

*Barred from space, Rod Cantrell gets  
an unlooked-for chance to fight  
galactic marauders who  
threaten life!*



One of the painters  
played the mouth  
organ and there was  
a three-dimensional  
dance (CHAP. VII)

a novel by  
**MURRAY LEINSTER**

## CHAPTER I *Grounded!*

**T**HE Chairman of the Space Project Committee was very polite. But he was a politician and Rod Cantrell had been a soldier and was a very famous man and all politicians know that soldiers and

other practical men can be most obstinate when politics shows clearly what should be done.

"Permit me to congratulate you," the Chairman said blandly "on your promotion."

"On being kicked upstairs?" asked Rod drily. "I'm not pleased. It looks to me—since that's what I came to protest about—that I'm promoted to something like a dum-

## A Group of Earthlings Plays Bi-Universal Hide

my job so that the work I want to do and the decisions I need to make will be made by people who think more of elections than of really important things."

The Chairman of the Space Committee laughed appreciatively. But he made a mental black mark. This man would not be amenable to political pressure. Perhaps he had better be a little more thoroughly deprived of authority—and given more prestige to make up for it.

"Oh, come, come!" he said indulgently. "What have you to complain of? The ship you're building has certainly all the funds anyone could need!"

"I think," Rod said flatly, "that we should postpone any attempt at interplanetary travel until we get some interplanetary weapons." As the Chairman beamed at him he went on doggedly.

"I designed the drive-units for the ship now building, for the one now under construction. I made the first interplanetary flights—the only ones made to date. But I urge the postponement of exploration until we have some defense. The weapons we have now would be useless against an enemy with space-ships."

The Chairman beamed on and offered Rod a cigar. Rod curtly refused it.

"Yet," mused the Chairman amiably, "you did not encounter any other space-ships in your three interplanetary flights, you cannot name possible enemies and you have not any real evidence that this—ah—hypothetical enemy you speak of has weapons superior to our own. After all, we have a gift for destruction ourselves! And remember, the idea of space-conquest has caught the imagination of the public!"

**R**OD set his jaws. He was prepared to be made ridiculous if he could bring about some measure of defense against the dangers he foresaw. But a politician could not be expected to believe anything dangerous if it brought in votes. And the proven possibility of travel, not only to other planets but to the stars, had roused enormous popular enthusiasm.

"There were Martians, once," said Rod. "There aren't any more. They had a civilization that in some ways was higher than ours. You've seen the proofs of that. And

they were wiped out. They simply vanished, leaving their cities to fall in ruins behind them."

"You assume that your—ah—hypothetical space-travellers destroyed them?"

"I do," said Rod. He added with some irony, "You must remember that I saw the dead Martian cities with the least stray possession left in place and what I believe were the remains of the Martians lying where they dropped. And I saw that pyramid on Calypso, which surely no men made. It was made by the race I'm talking about, which I haven't seen, which I can't name or describe, but which made it to lure the first man to see it into sending them a signal that space-travel had been achieved on Earth."

"Yet you did not even photograph it," said the Chairman, tolerantly. "And you insist that we devote research and money to weapons—when the world is very weary of weapons and of war—instead of upon space-travel, which has filled humanity with optimism it has never known before! My dear sir, it would be political suicide!"

"The point is," said Rod bitterly, "that not to do it may be physical suicide!"

"Now, now." The Chairman beamed cordially. "I shall confer with the rest of the Committee. You have just had a promotion and perhaps we can manage another. We are fully aware of your services in the past and you are surely the only interplanetary voyager, so you cannot be contradicted. But you ask the making of a very unpopular decision! Suppose we raise you another step in rank?"

Rod stood up, rather pale.

"I'm not trying blackmail," he said bitterly. "I'm trying to drive some sense into your head! There are more important things than winning elections, and staying alive is one of them! I can resign my commission and speak publicly of what I fear."

The Chairman's smile remained, though he spoke acidly.

"I am afraid the popular impression would be that you wish to prevent further space-voyages, to keep the credit of being the only man who had ever crossed space. I am sure that—ah—other officers who are your equals in rank would look at it that way. I shall discuss the matter with my Committee. Meanwhile you are, of course, under regulation

## and Seek With the Deadliest Killers Ever Known!

obligations not to make public statements without official clearance. We will see about another promotion for you."

He bowed Rod out, beaming at him benevolently. And Rod was sick with apprehension. He'd wanted to have the first real space-ship capable of putting up a fight. He be-

proof. If he could show a group of scientists that proof. . . . But as it turned out he wasn't to be allowed to do anything so sensible.

**T**WO days later he had his orders. He had a promotion. And all real authority was taken from him. He was again kicked



Rod cut into the strange structure with a thermite torch (CHAP I)

lieved it might need to fight. But anyhow he was still in command of the construction of the space-ship now building and he'd command it when it took off from Earth.

Maybe he could find more conclusive proof of the peril he believed in. Most likely, indeed, on the Moon. The central peak of Tycho would be the logical place to look for

upstairs, to a desk, and he was transferred to another branch of the service. He received the warmest possible thanks for the value of his contributions to the project from which he was now relieved. He went sick all over. And when he told Kit Bowen about it he could have wept with impotent fury. She looked at him indignantly.

"It's not fair!" she cried. "You designed the ship, Rod, and you're the only one who will really know how to run it, anyway, and—and—"

Rod tried to grin at her, but he couldn't. It was too important. Much more important than his own feelings in the matter.

But he said through somehow stiff lips, "I'll show my successor everything I know, Kit. And I'll try to make him believe in what I'm worried about."

Kit stamped her feet. Then she turned away to keep him from seeing that she wanted to cry. But she didn't really understand the gone feeling inside of Rod at that.

They stood beside the hulk of the *Stellaris*, which was just two-thirds completed. The ship was a hundred-odd feet long and forty-some through. It was a space-ship—the first vessel ever built on earth to navigate the regions between the stars. Rod Cantrell had designed it, after making the first human interplanetary flights in a modified captured weapon taken from the rebels in the war of the Total State against the Earth Government.\*

He'd seen the possibility of a space-drive in a device that had been created only for mass murder and the drive he'd worked out was no makeshift calling for centuries of development before men could aspire to the stars. His first flight in the toy-sized altered weapon took him to the Moon with absolute ease and safety.

His second was equally safe and precise and it took him to Mars. He brought back photographs and artifacts for proof. And the third flight, aimed at a more distant objective to check the physical constants governing the space-drive, had reached Calypso, the largest of Jupiter's moons.

That makeshift craft, though, could only make flights as stunts. The *Stellaris* had been begun to carry an adequate crew of scientists for the study, first of Sol's other planets, ultimately for roaming the stars so that human colonies could begin to spread throughout the Galaxy. Rod Cantrell had been given charge of the ship's construction, and he had been promised her command.

But now he'd been handed orders from the Space Project Commission which dashed all his hopes. He was not only relieved of the duty of supervising the *Stellaris'* construction but was bluntly informed that he would not even be a member of her crew when she

left Earth—because of his wild tale of an inimical race, possessing space-ships, which would threaten the peace of Earth.

Kit said, gulping, "It's not fair, Rod! It's stupid! It's unjust! You deserve—"

"That doesn't matter," said Rod. "What does matter is what can happen. This decision is on account of my report on that pyramid on Calypso."

"But you did the right thing!" insisted the girl. "There wasn't anything else to do!"

"That was my opinion," said Rod, "but the Commission doesn't agree. I think they feel that I consider myself too famous and that I'd like to stop space-travel so I'd stay the only man who ever achieved it."

"Nonsense!" scoffed Kit.

"They've suspected that report from the beginning," Rod added. "They've never allowed any reference to the pyramid to be published. They said it would cause public alarm. Of course, it would imperil their jobs.

"Their places were created to encourage space exploration. If they discourage it, instead, the Commission will be scrapped and they'll have no salaries. I hate to think of so great a risk being run just so some political appointees can stay on salary."

**K**IT BOWEN made a scornful sound. She wasn't exactly engaged to Rod, because engagements were no longer considered matters that existed formally to be announced. But they had planned to marry. Rod knew now that it had become doubtful. He could have played it more or less safe, and guided a scientific expedition in the *Stellaris* in search of proof of what he knew.

But he'd tried it the right way, with full reports and an effort to throw the Committee behind research for defense. As a result, he was kicked upstairs. He'd never have another chance. And to be a permanent desk-officer—Kit wouldn't care, but he would.

Riveters pounded on the *Stellaris'* metal skin like monster woodpeckers hunting giant grubs. They were putting on the flotation-bulges, designed to make her float merrily, even if she landed in a sea of liquid ammonia.

The air-lock construction-doors of the ship opened. Electricians came out and headed for the commissary for lunch. Two girls, no doubt assistants in biology working on the air-purifying plant, also came out of the lock, chattering, and went briskly to the same place.

The air-system for the ship was already

\*See STARTLING STORIES, January, 1949.





The women colonists presented Kit with a costume  
made of some of the looted fabrics (CHAP. XIV)

installed and was being tested by being run to purify the air used by workmen on the inside of the already-sealed hull. The ship's corridors were still bare metal though and it would be many weeks yet before the living quarters were fitted out, the computers and astrostation instruments put in, even the first of the ship's stores accumulated.

But the field-generators and tractor and pressor beams were in and had already been tried out. The ship would positively go anywhere in the galaxy that her crew demanded, though she was the first Earth-ship ever built for space-travel. Only Rod knew that she wasn't the first space-ship. There were others.

The thing was that the crews of the other ships, roaming among the stars, weren't human crews and they wouldn't welcome human competition.

He'd learned that from a silvery-metal pyramid, some thirty feet of seamless stuff on every side. It was out on Calypso, on the very peak of the highest and most singular of the mountains of that sub-satellite. It had not been built on Calypso and certainly men hadn't made it but the creatures who had made it knew that men existed.

There were bas-reliefs of human forms upon its brightly-gleaming metal sides and there were two human-size metal doors that could obviously be opened by simply turning the handles of two human-sized locks. Its location was one that would certainly be visited by any human explorer of Calypso, if only so that he could leave a record of his visit there for later voyagers to find. And that so-human pyramid, suggesting earlier visitors still, would almost irresistibly impel the first man to reach Calypso to turn the door-handles and go in.

But Rod Cantrell hadn't done that. Perhaps because of war experience, perhaps because he didn't like the artwork. He cut into the structure with a termite torch, leaving the doors alone. He found it packed with machinery which surely wasn't of human design, and he struggled to understand it.

In the end he found a power-storage unit that was far and away beyond anything of human manufacture. He cut the power-leads and traced connections. And then he caused the doors to open. In opening they swung contacts and controls and he saw that they'd have sent the power—some hundreds of millions of kilowatts—in a mighty surge of energy through a device he didn't begin to

understand but which was obviously some sort of radiation-generator.

And instantly thereafter the whole pyramid and its machines began to smoke and were glowing faintly by the time he got out of it. It melted itself and dissolved in a pool of melted metal—which exploded when the cut-off power-unit blew. So that he had nothing but a verbal description to offer with his report—and he wasn't quite believed.

## CHAPTER II

### *Take-Off*

**N**OW he stood beside the incomplete hulk of the *Stellaris* with the orders that ended his career in his hand.

"It still seems to me that I did the right thing," Rod said bitterly. "I guessed it as a sort of booby-trap. It was a gadget to signal somebody, somewhere, when men climbed up to the point of achieving space-travel! And who'd want to be warned when we reached that stage? Not friends certainly! If they'd been friendly they'd have helped!"

"Of course they would!" said Kit with conviction.

"I kept that signal from being sent," said Rod. "If I'd kept my mouth shut I'd have commanded the *Stellaris* and we'd have found another one—there's probably another on the central peak in Tycho's crater on the Moon—and I could have made the Commission see it.

"But I had to tell about it, believing my word would be taken. So now somebody else will take the *Stellaris* out and it'll be pretty odd if the signal doesn't get sent off when he finds another pyramid. And then what'll happen? What would we do if we'd been traveling among the stars for ages and found a new, upstart race getting ready to compete with us? And a rather pugnacious race, at that? We'd smack them down and fast!"

Kit said, agreeing fully, "If we found them before they'd reached that point we'd try to make friends with them."

"Whoever built the pyramid found us," said Rod, drearily. "Maybe a few thousand years ago. Maybe at the time they knocked off the Martians. They didn't bother exterminating us then. We weren't worth the trouble, though the Martians were."

He shrugged his shoulders hopelessly.

"Anyhow I've got my orders. Somebody'll come to take over from me within hours. I'm going to take a last look over the ship and then clear my desk and get ready to leave. Want to come with me?"

Wordlessly she pressed his arm. They went together to the air-lock. Rod Cantrell composed his face so that nobody could guess his inner feelings. The lock-doors opened and they entered.

Immediately there was the oddly pleasant smell of growing things which came from the air-purifying set-up. It was partly experimental still, but it demonstrably worked. The air in the ship had been kept fresh and breathable for more than six weeks, despite the men who worked inside the hull, by specially-bred plant life kept in hydroponic tanks.

There were chemical purifiers in reserve of course but normally the ship's air would be restored to normal as the air of Earth is kept sweet—by plants. There was even a section of the air-room in which food-plants were being tried out for the same purpose, turning out foodstuffs as a byproduct of the purification of the ship's atmosphere.

In hydroponic tanks, vegetables grew with amazing luxuriance. The *Stellaris* would not be quite self-sustaining but there should be at least occasional meals of dewy-fresh vegetables even when the ship was on the far side of Orion.

Rod Cantrell and Kit stepped into the unfinished interior of the ship. The smells of work were noticeable, though work had stopped for the lunch-hour. Rod looked lonesomely about. In all probability he would never set foot in the *Stellaris* again.

The smell of vegetation was strong and pleasant, but there was the smell of paint too and the curious odor of heated metal cooling off—all the aromas of uncompleted construction. In a room designed for storage four painters ate their lunch companionably from lunch-boxes, rather than bother to leave the ship. An electrician smoked restfully beside his tools.

They went into the engine-room, in which there would be no single massively-moving part. A tiny isotopic generator made its humming noise. It was built around a block of artificially radioactive material which gave off electrons alone, with no neutrons or mesons or gamma rays. It yielded utterly safe power and when its total output was not needed for the ship's purposes, the excess

free electrons were absorbed in another artificial isotope, which, in absorbing them, became converted into the parent substance.\*

A fuel-supply for years of operation thus had necessarily been built into the ship when it was made.

**T**HE field-generators, too, were all complete. They had been tested with the *Stellaris* safely anchored at bow and stern with tractor-beams. Rod regarded the generators hungrily. He'd designed them and they had features of which he was very proud. But now he'd never be able to see for himself how his designs stood up under service conditions.

"You know how the force-fields work," he said almost wistfully to Kit. "In theory there are an indefinite number of dimensions, therefore an indefinite number of—I suppose you'd call them universes—in parallel. Our universe hangs together because all its parts attract each other magnetically and there are gravitational linkages all through space.

"There's an incredibly complex network of electrostatic stresses by which even island universes attract each other. So our universe is stable. But if all the forces that link an object to our cosmos—the things that tie it in—are cut it falls out of the universe we know.

"It goes apparently into a dark universe, where there seem to be no stars. Maybe it's a dead universe where the process of entropy is complete, where all the energy of the system has run down. But we don't know yet."

Kit nodded wisely. In the late rebellion of the Total State the city of Pittsburgh had vanished between two heart-beats with some millions of human beings. Washington had been slated to go next and Rod Cantrell had been duped—or so it was thought by the war lords of the Total State—into operating the weapon which would destroy it.

But he'd understood their weapon a little too well and it had been turned terribly against them by his understanding. Now the Earth Government ruled undisputed again—and the Earth Government had taken from Rod his chance to go with the *Stellaris* to the void between the stars. Because he'd made a report that nobody wanted to believe. . . .

(\*Note: An isotope giving off electrons only in its decay was known as early as 1947 and even at that date "beta-rays" were made from it which yielded from 100,000 to 400,000 volts. So early, however, it was only recovered as a small fraction of the by-products of atomic piles. M.L.)

"These generators," said Rod wistfully, "make a field close about the *Stellaris* which cuts every natural link between the ship and the million-billion suns of our universe. Electrostatic stresses can't go through that field. Gravitation doesn't penetrate. Magnetic lines of force are stopped. So the ship leaves our universe. As Pittsburgh did. Only—we leave one link of our own making.

"We leave a tractor-beam in existence, pulling the ship toward one spot. A tractor-beam can penetrate the field that cuts off everything else. And the ship is drawn to the one spot the tractor-beam is focussed on, although it moves in a parallel universe and isn't in our cosmos at all. When it stops at the object the beam is pulling we cut off the force-fields and apparently fall back into our own space. But we've traveled!"

Kit nodded again. She knew all this of course but Rod was heartbroken and it helped him to talk.

"And," he said wistfully as he led the way out of the engine-room, "a pressor-beam works the same way. We can push away from a place we want to start from, instead of waiting for a tractor to reach out a few light-years to our destination."

He sounded almost enthusiastic as he went along the straight-line corridor between the engine-room and the control-cabin—as yet practically empty of controls.

"My trip to Calypso proved," he added, "that the mass-inertia ratio in the dark universe I actually traveled in, isn't the same as in our universe. The speed of light is higher—much higher. The time I took to get to Mars suggested it and the trip to Calypso proved that the constants of the two spaces are different. I reached Calypso through the dark universe faster than light could make the trip through ours!"

Then he stopped. He'd reached the control-room from which he'd expected to direct the *Stellaris*. There was the big instrument-board with practically none of the intended instruments set into place. The switches that had been installed were taped to the "off" position, to avoid accident. They'd been used just once, when the force-field generators were tried out and the ship—kept from traveling by anchoring tractor-beams holding her fast—had gone into the dark universe for minutes.

"But," said Rod, after an instant, "that's that!"

He stood grimly in the ship he was now

forbidden to command.

Then, just as he turned to lead Kit outside again, there came a sudden sharp crackling sound from somewhere in the ship. It had the violent harsh timbre of an electric arc. Somebody shouted frantically. By sheer instinct Rod Cantrell plunged toward the scene of emergency.

**B**UT he didn't get there. Suddenly he seemed to be falling endlessly, horribly, nightmarishly, with no weight and no grip on anything. There were vision-ports in the control-room, intended to permit a view of a landscape or of the stars. As the crackling roar grew thunderous those vision-ports turned red, then orange, then flashed through the spectrum to violet and beyond.

The vision-ports became filled with utter blackness and on the instant the control-room was as dark as any cave on Earth and Rod and Kit seemed to be hurtling blindly through sheer opacity. Kit uttered a strangled cry. She had left the floor when weight vanished. She had the hysterical sensation of an increasing, breathtaking dive.

There were screamings somewhere. There was a strange metallic smell of vaporized cable. There was the pungent reek of ozone. The roaring seemed to grow yet louder and the panic-stricken cries grew with it. There came the stench of burned insulation and then of sooty smoke.

Kit cried out again, "*Rod!*"

He said in a coldly savage voice. "Steady! You're not falling. The fields went on from a short-circuit somewhere in the ship. Now the ship's on fire and we're in the dark universe—traveling. Steady!"

A little flicker of light—flame—appeared in the corridor leading to the engine-room. There was enough light to show Rod, floating helplessly in the air, inches only from a featureless metal wall. Kit drifted yards from any solidity, her eyes wide and filled with fear.

But the light helped. Rod twisted himself and kicked. He went tumbling—head-over-heels away from the wall—to the floor, where he grasped the edge of the incomplete control-panel. He swung himself about. The light flickered again, and he leaped, diving through weightlessness for the corridor.

He went soaring into it and a mushrooming mass of yellow incandescence licked out of it. Kit screamed. But the flame died away a little as he plunged into it, flared out again

only when he was almost through, so that it barely singed him. He went plunging on into the engine-room.

Unable to stop, he floated until his outstretched arms cushioned his impact against the far wall. He swung about again and soared a second time—this time for the humming small isotopic generator which supplied the electric current for all the ship.

He reached it. He held fast—it was extraordinarily hard to hold fast with no weight to help—and savagely cranked off the manual switch which had kept the unit inert during shipment. The roaring of the arc died instantly. There was only an ominous booming noise as paint and insulation and construction-stores heated by the arc continued to burn. But even that tended to die down without the arc to keep the flame supplied with vaporized fuel.

Then Rod looked at the ports in the wall of the engine-room, and cold sweat came out all over him. The ship was incomplete. It was unequipped. It had no stores at all. But it had taken off from earth. There were stars in view out the vision-ports, now that the force-field had cut off and the ship was back in normal space. But it wasn't on Earth. It wasn't on any planet.

And there wasn't any sunlight shining in any of the ports. There weren't—this made Rod's throat go dry when he threw himself across the dark vacancy of the engine-room to one port after another and stared out—there weren't even any familiar constellations. The *Stellaris* had had a speed and kinetic energy of its own by virtue of the shared motion of the Earth on its axis and around the sun, and the other motion of the solar system as a whole.

It had gone into the dark universe where the constants of mass and inertia were strange and still unexplored. There was not even a bright yellow star anywhere in the heavens which might be Earth's sun at a greater distance than usual. The *Stellaris* was somewhere among the stars. Earth and its sun could be anywhere, in any direction, at almost any distance up to light-millennia away. There was no possible way to tell. Even worse—

The ship, in fact, was a derelict. It had been designed to be driven by the reaction of its tractor and pressor beams upon solid bodies outside of itself. Now, apparently, the nearest solid objects were the stars. It would take years for the beams to reach the



Rod had one glimpse of the pyramidal shape as he fired the force-field switches home (CHAP. III)

nearest and there was no instrument on board by which the nearest might even be chosen. There were no stores of food, no star-maps, no trained crew—there was no faintest reasonable ground for hope nor reason for any effort.

But Kit was on board. So when the flames died down and only a penetrating, noise-some reek of burned paint filled the air, Rod Cantrell turned on the isotopic dynamo once more and switched on lights throughout the ship.

Painfully he began the process of searching the unfinished hulk for unwilling members of its company, to calm them and sooth them and threaten them in preparation for labors he had yet to imagine, for purposes he had yet to devise, toward ends he could not even conceive of. Oddly enough, he did not even think of the alien race that had been the cause of his uneasiness back on Earth. But here among the stars was where the greatest danger lay.

## CHAPTER III

### Contact

**T**HAT danger manifested itself within hours. The short-circuit had been repaired—a painter had shifted some welding-rods to make room for a comfortable nap during his lunch-hour, and so had made a contact between two exposed wires from which take-off leads were to have led current elsewhere.

Lights again burned throughout the ship and Rod had turned on all pressor-beams in the rather desperate hope that somewhere within their range there might be some solid substance to give the ship navigability. Actually the most he hoped for was something to drive toward or from so that there could be acceleration and the feel of gravity to hearten the bewildered and frightened people who were the *Stellaris'* unwilling crew.

They were turned on and almost immediately he thought he felt a slight stirring of the ship. It was too slight to be sure. When he held a coin at arm's length and let it go, it stayed there in mid-air. If anything had been touched by the beams it had been lost—had slipped out of them. The nightmarish feeling of perpetual falling contin-

ued. Reason did no good. The sensation was nerve-racking.

Then, suddenly, a flash of unbearable light poured in through the vision-ports. It lasted no longer than a flash-bulb's flare, and was gone again. But Rod dived for a port and stared out. Instantly he blinked, blinded. As he reached the glass window opening upon all of space a second flash came.

It was blindingly bright—but it came from a tiny spot, an infinitesimal spot, no larger than a star-image. A pause, then a third flash came. It would make the ship's hull glow as if incandescent. And the third flash was not from the same place as the second.

Rod was dazed for an instant. He had a flash of hope. Then he knew better. He'd had the pressor-beams turned on at random. They'd touched something which had sped on out of the pressor-beam field. Now that something flashed a search-beam. And there was but one possible source for brief unthinkable-bright flashes of light which would last only for thousandths of a second.

Only in space would a light-beam have certain advantages over radar. On Earth radar penetrates clouds and mist. In space there are no hindrances to vision. If there were a space-ship somewhere off there in the void and if it had detected the *Stellaris'* pressor-beams and dived out of them, it might use radar to locate the Earth-ship.

It would learn more from a single flash of visual light, yielding a photograph, than any scanning-beam could report in hours. The fact was wisdom after the event but it told Rod instantly that there was a space-ship yonder. And no space-ship could be friendly.

He went into frenzied activity. He dived back to the engine-room and swung the pressor-beams in tense and urgent quest. Spreading them wider at first he searched for something for them to react against. He found it. He felt the ship stir. He put on more power. The ship surged ahead. More power still and he felt the floor-plates push against his feet. He put on more power and more and more . . .

In seconds the *Stellaris* was thrusting away from something unseen at a full gravity acceleration. In minutes more it was a gravity and a half. Rod worked grimly with a small pressor, hunting for a focus so the beam could be locked to the object it was to thrust away from.

The acceleration increased. The fan-

shaped pressors were pushing against something which came closer despite the repulsive force of the beams the *Stellaris* played on it. There was an arrogant confidence in the other space-ship, which seemed to be testing out the maximum power the *Stellaris* could exert. Sweat came out on Rod's forehead.

Then, suddenly, the small pressor found a focus and locked and he struggled feverishly against nearly two gravities to the control-room. Just as he laid his hands on the force-field switches there was a sudden sickening loss of all but the most minute sensation of weight as the other ship darted out of the pressor-beam and came flashing up beside the unwieldy *Stellaris*.

**R**OD had one glimpse of it as he flung the force-field switches home. It was pyramidal. It blanked out a triangular patch of stars. Rod felt a momentary deathly giddiness—and then the force-fields closed in. The *Stellaris'* ports went ebony-black and it was again in the dark universe.

Whatever weapon the enemy ship intended to use did not follow into the dark cosmos, but the Earth-ship's focussed pressor did not penetrate its own force-fields and thrust and thrust and thrust—with all the power Rod dared to put into its coils.

The hulk went streaking madly through the utter blackness of its private cosmos for second after second—and nothing happened—and then for minute after minute, then for hour after hour.

For a long time Rod stood grimly at the incomplete instrument board, expecting any instant to feel that deadly giddiness and then death. Some weapon had been used against the *Stellaris* and he felt sick and weak and ill.

But after a long time he went down to the engine-room again and examined the single small pressor-beam he'd focussed and locked on the pyramidal ship and its point of focus was very, very far beyond the point at which it had been set. He could not guess the distance. There had been no chance to calibrate the controls. But it was very, very, very far away indeed.

After twelve hours the pressor could no longer adjust to the increasing distance. The pyramidal ship went beyond its range. The locked focus went off and the ship hurtled blindly on through black emptiness.

"They haven't got our force-fields," Rod

told Kit, grimly. "There's that much gained. They couldn't follow us when we vanished. At least we can play hide-and-seek with them!"

Kit had heard from him about the momentary glimpse he'd had of the other craft.

"That feeling we had," she said with a shudder. "I thought I was dying. So did everybody else."

"We probably were," he said evenly. "If it had lasted a fraction of a second longer they'd have caught the ship. They'd have examined our corpses and they'd probably have reported and had the records searched. They'd know that people of our structure should have set off a gadget on Calypso—only we didn't. I suspect we're not the only lucky people right now!"

An hour later he said abruptly, "I'm going to cut the field. That ship is a long way off. First I'm going to set the pressor-beams at a wide angle as a warning system. But we ought to do something better. . . ."

He hand-set the beams so that the ship would be surrounded by a shield of repulsion on every side. Any ship or planet or even meteorite that might be within range when the *Stellaris* returned to normal space would bring about a repulsion of the ship itself.

Having no detection-instruments, they could tell of the nearness of a solid object they could not see by the stirring of the ship itself. Then he threw the switches again, to let the *Stellaris* drop back into the universe of stars.

A myriad-myriad suns surrounded them, each so remote that it was but a pinpoint of light. Again there was no familiar portion of the galaxy within view. There was the Milky Way, to be sure, but even that seemed to have changed its aspect. It was markedly brighter on one side than the other—and Earth is not too far, on a cosmic scale, from the center of the First Galaxy.

The *Stellaris* had fled at uncountable multiples of the speed of light while in the dark universe. It was certainly many thousands of light-years from Earth, with no possible indication either of its first course or of its second in departing from it.

Rod stayed in normal space for four hours, and the pressor-beams told of no solid object within four light-hours' distance. Grimly, he went back to the dark universe. The kinetic energy of the *Stellaris'* acquired velocity remained.

In normal space it meant a certain speed in an unknown direction. In the dark universe that speed was multiplied. He kept the ship in blackness for half an hour, browbeating an electrician meanwhile into beginning the assembly of a short-short-wave receiver

**U**T into normal space again—and still no star within view which seemed nearer than any other. He had a course of action planned out, which was almost hopeless but not quite. He went back into the dark universe once more.

Six times within the next twenty-four he came back to normal space. Five times the *Stellaris* was utterly alone in the center of mockingly remote stars.

But the sixth time—and it was only chance—the *Stellaris* winked into being in normal space and there was a giant yellow sun perceptibly nearer. It had at least a visible disk and flaring prominences leaped and curled outward from its sides. More, there were planets. No less than four were plainly visible and a monster world—snow-covered from pole to pole—swam within naked-eye view from the vision-ports. He waited with taut nerves beside the force-field switches.

A bellowing voice came from somewhere below him in the ship. "*No-o-o-o radar!*"

That was the electrician beside his short-short-wave receiver. Only voice signals could be used in the uncompleted ship because there was no intercommunication system in being.

Rod waited. The pressor-beams spread out, out and out at the speed of light. Rod was hollow-eyed and jumpy. There was a stubble of beard on his chin. He had been doing four men's work under heavier responsibility than any man or men should ever be required to accept, because he believed that on the safety or utter destruction of the *Stellaris* hung the safety of the human race.

The voice came again from below. "*No-o-o-o radar!*"

The *Stellaris* then, was not being scanned. Not yet, anyhow. The ship stirred ever so slightly. The pressor-beams, fanning out, had reached the snow-covered planet. Rod called orders and the beams were narrowed.

The repulsion was from that planet only. Unless a space-ship were in exact direct line between the *Stellaris* and the planet there was nothing in space that was menacing. The odds were good. But Rod waited a long half-

hour, with the "*No-o-o-o radar!*" at regular intervals, before he even began to relax.

"I guess we're safe for the moment," he said wearily. "We'll have to take a chance anyhow. Kit, we want a tractor put on that planet yonder—not the near one but the next one in toward this sun. We'll time it, of course."

Even then he waited tensely. The invisible, narrowed tractor-beam reached out at a hundred-and-eighty-two-thousand miles a second. Four minutes—five—then a perceptible jerk. The planet was in the neighborhood of fifty-five million miles away but now the ship was being drawn toward it.

"Rod," said Kit anxiously, "you're terribly tired! Can't I stand watch for you?" It'll be hours and hours before we get there!"

"It'll be days," said Rod wearily. "We'd better stay in normal space for this trip. But I'll fix a gadget. If those pyramid devils can't follow us into the dark universe we can fool them at that."

He surrendered the controls to her. He improvised a spring which would throw on the force-fields and keep them on if the person on watch should be killed by a weapon like that they had experienced.

"Get somebody to hold this," he said tiredly. "There's enough pull to give us the feeling of gravity. And I've got a sort of idea."

## CHAPTER IV

### *Dead World*

**H**E SAT down to draw plans and make calculations. But within seconds he was asleep. It was not only the sixty-some hours of unremitting tensely but the strain of worrying about what might be happening back on Earth that had worn him out. It would be believed of course that he had taken off in the *Stellaris* deliberately as an act of resentment at having his command taken away from him.

And of course he would be classed as a traitor or murderer or worse and immediately the Space Project Committee would set to work to duplicate the *Stellaris* and send it off—undoubtedly without orders to be wary of metal pyramids. He had to get back to Earth in time to stop that—which was



patently impossible. He could not hope to get the *Stellaris* or Kit back to Earth at all.

He slept and Kit stood valiantly beside the almost empty control-board. The *Stellaris* moved on toward the unnamed planet of an unknown sun, its acceleration giving the effect of weight for its occupants. Word went about the oddly-assorted ship's company of an approaching landing, and they cheered.

The girl biologists, in charge of the air-purifying plant, brought it back to proper functioning. The hydroponic vegetables had borne a small crop of edibles, despite the alternations of gravity with no gravity at all. The crop was very small but there were not many to eat it. Four painters, two electricians, three arc-welders and five girls had remained in the ship during the lunch-hour which seemed so long ago.

Presently a painter came to the control-room to present a complaint. Kit put her finger to her lips, pointed to Rod and beckoned. She explained the significance of the spring, whispering, and made Rod as comfortable as she could without waking him. Then she went about the ship, talking earnestly to every individual.

It was a very good idea, because with continued normal feeling of weight, something like normal mental processes returned to the unwitting voyagers. They began to realize that none of Earth's other planets was suited for human use and that it was not likely that this unknown world would be of any value for them.

They realized, too, the utter lack of preparation for interstellar travel. There was not even food, save for the garden in the air-purifying room. But Kit managed to change their forebodings to no worse than anxious curiosity and when they had reached that

stage they were prepared to act as intelligently as they could. So the situation, as far as the crew was concerned, was much more hopeful.

Kit waked Rod when their chosen planet loomed large before them. He opened his eyes as a voice bellowed monotonously, "No-o-o radar!" from somewhere below in the ship.

"We're almost there," said Kit anxiously, "and we don't know how to land."

Rod was instantly awake. He stared at the disk—big as a dinner-plate—on the planet ahead. The sensation of weight proved that the *Stellaris* was hurtling toward it at ever-increasing speed.

"We'll switch to pressor-beams and slow up," he said. "So far, pretty good!"

He sent calls through the ship, warning of the change-over. There was a bare second of weightlessness, then all floors became ceilings and all ceilings floors. It was purely a guess-work process. Rod could estimate the planet's distance only by the time needed for the pressor-beams to hit it.

He could not estimate the ship's speed at all. But he set to work to improvise landing tactics by rule of thumb. As a first measure he shifted the beams to one side of the planet, so that the *Stellaris* would no longer head straight for the center of the visible hemisphere.

It was necessary to remember that the danger from alien space-ships might easily be greater here than anywhere else in the universe. The *Stellaris* might actually have come back to normal space so far within the empire of the pyramid-builders that radar-beams and scouts were considered unnecessary. She could, conceivably, be heading for

[Turn page]

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the very stronghold of the alien race and could have been undetected only because such an approach was unimaginable. But it was not likely.

**T**HE ship's course altered almost imperceptibly. She had been approaching too fast for an endurable stop short of the strange world's surface. Now she went angling over to a line that would carry her past. But the great disk enlarged and grew greater and they saw seas upon it and clouds and vast areas of green vegetation. When the ship shot past the twilight zone the surface was within mere thousands of miles.

Rod said, "I wish we had a telescope on board. I'm not sure, but I saw some splotches that could be cities."

"Do you think—"

"I'm not guessing," he told her. "I'm taking a chance. If they beam us it's the pyramid people. If they don't it isn't. But there must be plenty of civilization in our galaxy. The fact that they had a trick all worked out to get warning when we made space-ships rather hints at that.

"If there are two civilizations there are probably hundreds of thousands. There must be too many for the pyramid people to wipe out, so they only set traps for them and knock them off when they reach a space-ship culture."

Kit said uneasily, "That—ship certainly turned something on us, without trying to signal us first, and we were plainly running away and not trying to fight them."

"Not surprising," said Rod briefly. "I saw the bas-reliefs they made of humans."

He had. On the pyramid on Calypso there had been modeled human figures. They should have been irresistible as incitements to curiosity, so that the doors would be opened. But the figured people were not modeled by friendly artists. The figures had been made by craftsman who despised their models.

No artist can keep himself out of his work and the figures had actually made Rod angry at the scorn implicit in their making. They pictured humans with strict accuracy but managed somehow to classify them as beasts and vermin. Men would not have pictured men with such scorn.

Rod had felt instant suspicion and hostility toward the builders of the pyramid and was disinclined to do anything they planned for him to do. That was why he'd cut into the

pyramid instead of hopefully opening its doors—and that was why there was as yet no warning that humans had achieved space-travel.

Kit said presently, "You're planning to land, Rod. Can we test the air?"

"The sun's the same color as ours at home," Rod told her. "It must have nearly the same spectrum. And the vegetation's green. The chemistry must be the same. If plants use chlorophyl here to utilize sunlight like ours, the air must be oxygen and nitrogen and CO<sub>2</sub>. Other gases wouldn't work. We can't even guess at the proportions. We'll probably do, though."

"And the—gravity?" she said uneasily.

"We've nothing to measure it with," he said with a shrug. "But we do know that we didn't have to push unbearably to get over to one side and run past. We practically tested the gravity with our feet—high up as we are." Then he looked at her sharply. "I had some sleep, Kit. I doubt that you did. Better go get some."

She hesitated, and looked at him wistfully. He said heavily, "I'm not very romantic, am I? But I've got plenty on my mind. The people in that space-ship tried to kill us out of hand. They must have killed off the Martians.

"They'll kill not only us but everybody back on Earth if they catch us and find out our physical structure and check it with the records they'll undoubtedly have made when they modeled those figures on the Calypso pyramid. So we've got not only our own lives to think of but literally everybody else's.

"I've got to try to figure out a way to finish this ship, and arm it somehow—but I've got the beginning of an idea—and I've got to concoct some way to blow it and us literally to atoms if we're caught and killed. And after all that I'm—well—I'm very much in love with you and I've got to figure out something to make you safe."

He stood doggedly by the controls, holding the force-field switches against the springs that would throw the *Stellaris* into other-space if he should be killed where he stood. Kit's eyes softened.

"I—see. We can't think about us. Not yet."

"Not yet," he agreed heavily. "If we're safe here—and I'm beginning to think we are—I'm going to try to get the *Stellaris* down. If those splotches are cities the in-

habitants may be anything and they may be friendly or not, civilized or not. But I'm hoping they're not the people who tried to kill us."

He turned back to the vision-ports. They were over the night-side of the planet, and to one side—actually it felt as if the planet were below—there was only the blank black bulk of the unknown world. It was hardly a thousand miles away but the *Stellaris* could not be checked to land on it without killing all on board by multiple-gravity deceleration.

Then the dark globe lay behind and it was time to change back to tractor-beams to pull back toward it and lessen the ship's headlong speed toward infinity. And then, hours later, the again-remote planet ceased to dwindle and grew large once more and he juggled alternate tractor and pressor-beams to bring the *Stellaris* close to its day-side, then to match speed with the planet's surface. At long last he dared let the clumsy hulk which was the Earth-ship down into atmosphere.

**B**ELLOWING came from below. "No-o-o radar!" And then a new voice called, "No-o-o radio!" Because a civilization which did not have space-ships or even radar could have broadcast-waves in its atmosphere, as Earth had done for nearly a hundred years before space-travel became possible to its people.

The ship went heavily lower and lower, more and more slowly in relation to the jungle underneath. Where the ship approached there was jungle. There were rivers. Far away there were the slopes of a mountain range and, off to one side, the authentic blue of a sea. The ship went sogily down and down, its small and accidental crew gazing at the scene no human eyes had ever before looked at—lower still and individual jungle-growths became visible.

There was a straight streak which looked like a highway of some sort. The *Stellaris* floated onward, rocking a little on the pressor-beams which supported it. Then a city appeared at the horizon. There were towers and pinnacles and a myriad prismatic flashings of reflected sunlight.

But there was no movement, no smoke, no aircraft overhead, no signs of alarm or recognition of the *Stellaris'* existence. The ship was only two thousand feet up and there were deep depressions in the vegetation below where its pressor-beams touched ground

to uphold it.

The city drew near. And it was dead. There was no life anywhere. But it had not been dead long because the jungle had not yet encroached on it. It was simply dead—undevastated, untouched, unharmed but dead.

Rod brought the ship to a wallowing stop over the very center of the metropolis. It reached for miles in every direction. On a basis of human occupancy, it could have housed a population of millions. Yet there was no movement below. Rod began painstakingly to let down for a landing in a central open space.

Kit said in a strained voice; "Rod! Those little things on the highway. Colored things! Brightly-colored!"

"My guess," said Rod briefly, "is that they're the inhabitants. People who could build a city like this would be pretty civilized. No reason why they shouldn't wear brightly-colored clothes."

"But they're not moving!"

"My guess," said Rod again, "is that they're dead."

"A plague?"

"No. Our friends," said Rod grimly. "A civilization that could build this city would be close to space-travel. Maybe they sent a ship to that snow-covered planet and found a pyramid there and opened it up to see who among their ancestors had gone there first—and called in our friends to exterminate them."

She stared at him in horror. His face was very white. He nodded toward the very center of the open space into which the *Stellaris* descended. There was a bright-metal pyramid there.

"If, by any chance, there was a space-ship off on a voyage when this world was murdered and it came back after the murderers had left," said Rod harshly, "they'd probably think that some survivors had left word for them in that. And they'd open it."

"At a guess that pyramid on Calypso would have killed me too if I'd opened it in the normal way. Very probably that was it. The ones who summoned the murderers wouldn't live to know what they'd done or take back any word of what a pyramid implied."

The ship hovered only a hundred feet above the ground. Slowly, slowly, slowly, Rod eased it downward. He expected an impact but the *Stellaris* touched the strange world's surface with a surprising and quite

accidental gentleness.

Without explanation Rod went to the air-lock and closed the inner door. He cracked the outer door and sniffed cautiously. He tried again. He took a deep breath. The air seemed to him to be perfectly adequate.

To make sure, he stepped outside and breathed deeply. He felt a bitter amusement at the difference between this instant of landing on a strange world of another sun, and the way he'd pictured it while the *Stellaris* was building.

He hadn't thought that the landing would be made from an almost unmanageable hulk, unequipped for landing or navigation or even the testing of air, lost utterly in space, with the despairing knowledge that probably the best that could be hoped was that the dozen or so humans on the ship might manage to find a place of perpetual exile with a murderous alien race for enemies.

The air was good but nothing else was promising.

If the ship that had contacted the *Stellaris* had reported its encounter a galaxy-wide search for a race attaining space-travel might be already under way. If they found Earth.

For that matter, Earth's cities might already be filled with crumpled figures. Earth's air might already be empty of flyers. Earth's cities might already be as dead as this one. Rod Cantrell looked at tumbled heaps of garments on the pavements about him and cursed thickly.

## CHAPTER V

### *Marks of Murder*

IT WAS one of the girls in charge of the air-purifying plant who solved the food problem for the time being. Her test for toxic substances was simple but absolutely effective. A tiny morsel of vegetation was strapped against a girl's skin near the wrist. A deadly substance would produce immediate reaction. Irritation or pain or loss of sensation would show toxicity without any risk or danger to the girl.

A group of two painters and an arc-welder marched to the edge of the jungle and gathered what fruits they could find. They came back loaded down, reporting apparent cultivation of the ground, only partly over-

whelmed with wild growths. Carefully labeled samples decorated the arms of each of the five girls on the ship for the next two hours. Of all the specimens, only one produced a slight rash.

Then it was a question of finding out which of the remaining fruits were most palatable. Tiny samples, chewed and swallowed, answered that. One produced cramps. The rest seemed good. The problem of food, then, became to some extent merely a matter of gathering a sufficient quantity.

While this went on Rod Cantrell and Kit and one of the ship's electricians went exploring among the city's buildings for equally important materials. They wanted metals, tools, weapons. They hadn't much hope of the last in a civilized city.

They found plenty of metal. They found few tools. What they did find in horrible profusion, though, was the pitiful population of the city. Garments lay everywhere, each with a heap of dust within it. What unthinkable weapon had killed them could only be guessed at—though Rod thought he had an idea—but surely it had come upon them without warning.

There were huddled heaps of garments in places that were plainly shops, though the show-cases hung from the ceilings. There were innumerable heaps of clothing on the public ways, and in the queer vehicles the oddly human-like dead race had used.

Many of the vehicles were wrecked, as if their drivers had died at the controls and the untended machines had driven on senselessly until they crashed.

There were many quaintly human-like items in the dead civilization. The explorers found one little shop with identifiable cages in it, as if for small captive creatures, and collars of metal apparently intended for pets.

They found where groups of the vanished race had died as if in the midst of friendly conversation and—as their observation grew more acute—they saw that some of the heaps of garments were smaller than others, and that usually such small garments were beside larger ones, as if the murdered children had been with their parents.

Kit grew very pale. Rod glowered as they went on. The electrician with them scowled more and more deeply.

"Who killed all these folks?" he demanded pugnaciously. "It happened all at once and it couldn't ha' been more'n a couple of years ago."

"I think," said Rod tonelessly, "it was the gang we ran away from. The gang that made a metal pyramid on Calypso. The same gang that built a metal pyramid not far from where I landed the ship—which we're going to make use of if we have luck."

The electrician spat. "An' you think they killed these people?"

"Because," Rod told him, "they made a space-ship. The pyramid on Calypso was supposed to tip them off when we did. The pyramid in the square back by the ship is bait. If there was a space-ship away from home when this world was killed and if it came back, the people in it would think some survivors of the catastrophe had left a record for them."

"They'd go inside to see. And they'd be killed. And the murderers would be notified to come and mop up just to make sure. See?"

The electrician spat again. "We'd better figure out something to slap them guys down," he said coldly. "They need it."

The three went on. And everywhere they moved through the city they saw new evidences of the high degree of civilization the dead race had achieved, more and more of the pathetic heaps of garments which had been members of that race. Kit, perhaps, saw those most clearly. The electrician saw also the enormous wealth left ownerless by the annihilation of its creators.

Not only was there a metropolis left, which humans could take over and use with little modification, but there were goods and even jewels—strangely-cut and very beautiful—and all the other portable possessions of a civilized world. He made no move to burden himself though. There was too much of riches in sight to make mere looting a temptation. But it was plain enough that he saw.

**R**OD saw the technical side of the murdered culture. He noted the lavish use of non-corrodible alloys. He saw plastics used where human-made plastics would not have been satisfactory. He took a small sliver of colorless transparent stuff and held a flame to it. It did not discolor or char.

"Looks like fluocarbon," he said absorbedly. "These people had gone places!"

Then they entered a great building which was plainly a power-station and a communication-center at once. Here Rod was in his element and the electrician was not far behind him. The central hall was huge and bright with sunlight and there were many

machines upon the floor."

"Generator yonder," said Rod, nodding. "Looks like an electron-emitting isotope trick like ours. See the power-leads from it?"

The electrician observed, "Silver bus-bars. Looks like nylon insulation everywhere."

"Or fluocarbon plastic. Hm." Rod stared at a huge block of solid transparent stuff with metal sheets and rods deeply imbedded in it. Power-leads ran to it but the metal sheets did not connect within the transparency. He stared while the others wandered about. Then Kit, a little distance away, uttered a cry.

"Rod! Come here! Oh—it's terrible!"

Rod went quickly. And Kit was standing with clenched hands before a double row of instruments. Between them the floor was quite covered with the bright garments of the dead race, showing that all the occupants of the building had been crowded here when death fell upon their city. And the rows of instruments showed why.

They were, in effect, television instruments. But it took time to realize it, because on each screen a distinct and motionless image remained. Each instrument still showed the picture that had been upon it at the instant the city died.

Some of the pictures were of individual members of the race in the act of speaking. Others—many others—were of scenes upon the ways, either of this city or another, showing the dead race as it had been. On two screens there was no hint of danger or of the coming of death.

But no less than six showed the death-agonies of those who were still not dead. The screens were horrible to look at. Three—and this was where the heaps of garments were thickest—showed the sky. Each showed a strange object against a background of clouds or stars. And the three were identical. Each was a monstrous metal pyramid.

Rod stared woodenly at the images. Then he examined the instruments which held them.

"Vision-screens," he announced unnecessarily. Then he added, "A good trick. They didn't project their television. They modified a plate of some sort that can change like—well—like the skin of a chameleon. Didn't have to worry about brightness. Like a photograph, only it must have moved. When the machine went off the last picture stayed until it went back on again."

He fumbled and peeled off a strip of flexible material which formed the screen. The image remained on it. It was, in effect, a photograph of the last object the dying eyes of these people had looked at. He hunted and found a stock of similar sheets—but blank—to be used as replacements.

"Television," he said, "only you could keep any scene you wanted to as a photograph. I think I've got a good hunch on what killed these people. The trouble is to prove it."

Kit caught her breath. She was grief-stricken on the pictures on the other screens.

"Rod! They were so much like us! So much like us!"

"That flying pyramid was the destroyer," Rod pointed out. "A pyramid's a good structural form—the most rigid you can make with straight girders. And there's no sense in streamlining a space-ship because there's no air-resistance in space. Besides, polished metal at such angles would reflect away radar-beams—solar heat too if they wanted to go close to a sun.

"My guess is that this was a fighting-ship. It appeared in the sky overhead and these people's telescopes picked it up and they were watching it when they died."

The electrician said suddenly, "Hey! These sets must've blown out—"

"Whatever killed the people stopped the sets," agreed Rod coldly. "They wouldn't have switched them off just because they were dying. Whatever killed the people did something to the sets! If we open one up we may check on an idea I've got."

**H**E SAW the electrician reach in his overall pocket for tools. He went back to the big block of plastic with the imbedded and covered metal plates. The thing bothered him. The plastic was plainly an insulator and as plainly the whole thing was designed to perform some electrostatic or electronic function. He felt that he ought to understand.

One of the plates wasn't solid metal but pierced with innumerable holes like a sieve. Rod frowned, a hunch telling him that this was important. He tried to figure it out as an electrostatic device, guessing at capacity-effects between the enclosed plates. But this part would neutralize the capacity-effect between that and that and—

His mouth droppd open. It was a vacuum tube! Save that the parts were imbedded in

plastic instead of held in emptiness, it was plainly a vacuum tube! The plastic must have acted electronically like a vacuum, allowing electron-flow. And they must have had the trick of cold emission of electrons from a metal surface! If that were so this device would handle incredible amounts of power!

As Rod's eyes began to glow, the electrician came to him. "Hey! We can fix these sets! I opened one up and a pair of porcelain insulators is crumbled all up. They were the mounting insulators and they went to powder and the works settled and shorted and quit workin'!"

Rod wanted to babble of his own discovery but instead he followed back to the vision-sets. It was as the electrician had said. Supports for the apparatus within the cases had shivered to powder. Kit had a strange expression on her face.

"Rod! I've got an idea. I don't know anything about science but in school once our instructor showed us how supersonic waves could break glass to powder if they were strong enough and of sufficient high-frequency. He said they were used to sterilize things. Could the way these people were killed be something like that?"

"It could," said Rod grimly. "We had a dose of something like it from that other space-ship—remember? But air won't carry supersonics. It's elastic and they go down in pitch. And there wasn't any air where that other space-ship caught up with us. I think you're close. Very close."

The electrician showed Kit the powder remaining from the shattered insulators. It was very fine. The rest of the insulation was plastic. Then he bent down and tore at silken-garments on the floor. Not even Kit protested. The dead race had no such bony skeletons as humanity possesses. There was only fine dust within the garments. The electrician folded torn cloth to a pad.

"This's dry," he observed. "It'd ought to do for an insulator for a try, anyhow."

He reached into the case, then drew back and put on rubber gloves for safety's sake. As he lifted the settled mass of coils and wires there was a tiny snapping sound. A spark jumped brittlely and ceased. The electrician put the pad in place. He prepared another and adjusted that.

Kit said tensely, "It's working!"

They looked. The sheet on which a colored photograph had appeared permanently fixed, now changed beneath their eyes. It was

extraordinary to see the picture, by the light from overhead, change itself by an apparent flow of pigment from one spot to another to form a new arrangement of shapes and colors. Then—

Where the scene on this instrument's screen had been that of the last instant in the life of the people of this planet, now it was the scene currently in being. The street was empty of moving forms but there were those empty heaps of garments on the ground where the people of the planet had been. It was plainly a current view of the place where the connected sending instrument stood.

And then, preposterously, as they watched there came a movement in the distance. Kit caught her breath. Then the electrician swore luridly. And then Rod clenched his hands until the blood flowed in his palms.

## CHAPTER VI

### *Pyramids Coming!*

**T**HERE were living creatures moving toward the sending-instrument. Not many—the three human watchers could see clearly and there were but four individuals in sight. Those four individuals rode in one of the odd vehicles native to the planet.

They had bulbous heads and attenuated arms and legs, and one of them guided the vehicle to a spot no more than fifty or sixty yards from the vision-sender. There the vehicle stopped. The four got out and stared at a building.

One lifted something from a belt about his middle. Flame darted from it in a thin straight line. He swept it up, and sidewise, and down, and across again. A section of plastic-sealed wall fell slowly outward.

From somewhere within the vision-instrument, they heard the crash of its fall. The four marched unconcernedly across the wreckage, trampling underfoot the gay garments of the murdered native race.

Rod said in a whisper, "This may be a sender too. No noise!"

The three humans stood motionless. In minutes the four stick-like figures came out, burdened with loads of shimmering stuff the watchers could not identify. They piled it in the vehicle. They went back as if for more.

Rod thrust the others from before the

vision-machine so that, if this were a two-way instrument, their images would not remain on the screen at the other end. Crisply he ripped out the pads of temporary insulation. There was a tiny spark and the picture ceased to move.

"They're looters," said Rod grimly. "They're not the native race certainly. Presumably they're the crowd that travels in those flying pyramids. They're the murderers. And now it becomes clear why they wait for another race to reach the spaceship stage of civilization before they murder them.

"A civilized race leaves a civilization behind when it dies. It leaves cities to be looted. It turns murder from a precaution into a business!" His nostrils were widened. He breathed heavily, went white with a deep, corrosive anger.

"We go back to the ship," he said flatly. "You see the pattern! They murdered the natives of this planet without warning and set up at least one pyramid to tell them if any survivors turned up later.

"When they were sure it was quite safe they came back and now they've begun the leisurely looting of the cities whose inhabitants they killed. Quite safe and very logical."

His tone, at the end, changed to raging fury. But he led the way back toward the ship without a word of explanation. He was torn between quite irrational rage and a desperate desire to get Kit away from here and out of danger. Yet he knew that even back on Earth, unless something quite impossible happened, Kit would be equally doomed. Whether in flight through space or hidden in the dark universe she was in no better case.

Through the air-lock and into the ship. The party gone to gather fruit was back with a large supply. Rod called a meeting of the curiously-assorted ship's company. He curtly summed up the situation.

"There are three things we can do," he said shortly at the end. "We can leave this planet, which is being looted by the creatures who killed its inhabitants. That means taking a chance we can't even estimate of finding another planet where we can try to provision ourselves—and possibly arm ourselves for defense.

"We can go into the dark universe and open the air-lock and die quickly. Or—" he paused—"we can stay here, fight or dodge

the looters and try to find an observatory and starmaps and possibly the way back home."

There could be no dissension. But a painter pointed out that since he hadn't agreed to this voyage he considered that he was on overtime—rather, double-time pay for all work done outside of his regular job of painting. His union, in fact, might insist on a still higher rate of pay. And he would work only if assured that a mediation-based award of pay would be accepted.

Rod agreed impatiently.

"But the first thing," he said urgently, "is to hide the ship. The only safe hiding-place is the dark universe. You know how the field-generators were tested. We anchored the ship in place with focused tractor-beams and then turned on the fields. She went into the dark universe, but stayed in the part of it parallel to her slip. When the fields were turned off she came back to where she'd been. That's what we'll have to do now."

ONE of the girl biologists said dismally, "No weight?"

"No weight," agreed Rod. "Except for those of us out on the planet, working a little trick I think we can handle. Who volunteers for that?"

He had his pick of the ship's company. He chose an electrician and a painter and almost angrily refused Kit's insistence that she be of the party.

"I'm not going to take any chances," he told her, "but I don't want to be worried about you. And you're more able than anybody else to attend to what has to be done—on the ship, that is."

He shifted the *Stellaris* on her pressor-beams to a position close by the walls of a massive building. He anchored her there by focused beams and flicked on the force-fields for the infinitesimal part of a second. Back in normal space the ship had not moved. He tried it again for longer periods.

The anchoring tractors worked exactly as he wished. Focused, they worked even from the other-space, though when unfocused they could not be used either into or out of it. He wrote, at some length. Then he took a half-dozen small objects and focused material-handler tractor beams on them—small beams. He turned the tractor-power away down and then took them out of the ship despite the reduced-power tractor's pull.

He wedged them in place so they could

not fly back to the ship until released but so that they would fly back to the ship, even into the dark universe, when set free. Then he was ready. He and his two followers went outside. Rod looked up to the port through which Kit regarded him anxiously. He waved his hand.

There was a puff of air. The *Stellaris*—was not. There was only emptiness where she had been. She was in another cosmos, in another set of dimensions, as far removed from this planet's surface as the farthest island universe.

Yet if any of the small objects arranged for the purpose were released it would be drawn to the ship and through the force-field and into the open air-lock in the fraction of a second, implying a removal of no more than yards.

Rod started off for the big building in which he'd found the television sets and the isotopic generator and the huge mass of plastic which was a vacuum tube in its functioning. On the way he spoke crisply.

"We had a space-ship turn something on us that was pretty bad. It lasted only the fraction of a second, so it didn't kill us. Here something deadly hit. It didn't break plastic or metal or stone but it crumbled ceramic insulators to powder. Got any idea what it could be?"

The painter, knitting his brows, said, "You can break china stuff when plastic only bounces. What they got? Something that smacks hard?"

"They didn't push down the buildings," Rod pointed out. "A bunch of little blows, like a compressed-air drill, will cut through stone that a straight push or a rotary drill won't handle. My guess is they had a sort of pressor-beam, only instead of pushing steadily it hit hard and fast—and often. Vibration."

The electrician said, demurring, "Y'd get an awful kick-back from a pressor-beam that went off an' on like that!"

"Suppose," said Rod, "in between it was a tractor? Suppose they had a beam that changed from a pressor to a tractor a hundred times a second—two hundred thousand? What then?"

The three men took half a dozen steps toward the hall of the machines and the television sets. Then the electrician grunted.

"Mmmh! You could fix the tensor-plate to be a chopper! Migawd, yeah! Say! I could fix one o' them!"



"We're going to," said Rod curtly. "We're going to use something the people that built this city made. My guess is that it'll handle a few hundred million kilowatts. And I know a power-unit that'll give it that much power—for awhile. We're going to work like hades!"

IN HIS mind there was a feeling of terrible urgency. There were looters in some other city of this same planet. That meant there was a pyramid-ship here too. It might be the plan of the space-murderers to loot one city of this planet at a time. It was much more likely that there would be cargo-ships coming to load up with the booty of their crime at as many cities as possible.

They'd have waited until they felt it safe to loot—but once they began they would not want the looting to spread over a term of years. After all, the jungle would begin to creep into the dead cities. Since there were already looters in one city there should be others on the way.

The electrician set about gathering the material for his coils and plates, cutting away freely at bus-bars and cables of solid silver to supply his needs. With power such as Rod had spoken of no mere wire would serve as conductors. He cut and tugged and tugged and cut.

Rod and the painter went out to hunt for a vehicle that could be made to run. When they found one not outwardly wrecked Rod had to sweat over it to discover how it ran. It stirred feebly—and that was all. They tried a second and its power was dead.

It was not until they came upon one which had apparently waited for its owners or passengers beneath an overhanging arch—so that it was protected from rain—that the queer vehicle moved briskly. Then they had to learn to guide it.

But they were back and trundling into the great hall before the electrician had begun to shape those illogical and superficially insane twistings of metal which ordinarily are hidden by weather-proof housings and careful range-limiters, in the tractor and pressor-beams of commerce.

He stopped to help Rod make sure of the cutting-off of the isotopic generator and then the two of them hacked at heavy leads and struggled with the massive bus-bars they would require. The painter judgmentally contrived a way to load the big block of plastic—which was a vacuum tube—on the

vehicle. Then Rod and the electrician mounted their coils about the "tube" in its exotic placing.

"I've got a hunch," said Rod suddenly "This is our mount! We'll run it up to the pyramid, cut in and connect the leads with the power-unit there. And then—"

The electrician swung around suddenly. "Yeah!" he said, blankly. "Then! Looka-heah! This thing ain't got any guides! I got her hooked to squeal up to the bloopin' point, an' with enough power in her there ain't goin' to be anything in who knows how far ain't goin' to hot up! Where' we goin' to be when you turn her on?"

"On the ship," said Rod, "and in the dark universe. We'll be safe there. I've got an idea how bad this is going to be!"

He worked on, grimly. Hours passed. Sweat covered him. The electrician mopped his forehead from time to time. The painter helped awkwardly, obeying orders. The feeling of tenseness grew greater and greater in Rod's mind. It was unreasonable but it was overpowering. It was a hunch so strong that at last he dared not wait longer.

"We get going," he said brittlely. "I'd like to file it down a little more but we can't risk it. Come along!"

He started the little vehicle. He ran it slowly out of the building, then faster and ever faster to the square where the *Stellaris* had landed. He backed it to the base of the pyramid—which was so much like that one on Calypso—save that the bas-reliefs pictured another race than the human—and stopped the vehicle.

He ran across the square to where he had wedged certain small objects in place. He scribbled a note to Kit on a scrap of paper as he ran. The paper was the order removing him from authority over the *Stellaris*. With an almost hysterical sensation of urgency he jammed the note into the little object, which pulled and tugged to escape from his hand.

He released it.

It flashed through the air—and vanished. It had been drawn through the force-field which cut off all the rest of the universe of stars from the *Stellaris*. It had, unquestionably, gone into other-space and clanked loudly in the open air-lock door of the space-ship.

AND Rod stood wrestling with his illogical impatience while seconds ticked away, more seconds and more—but he had given strict orders that when a noise of an

arriving object sounded in the air-lock, the outer door was to be closed and the object examined for a note before any action was taken.

Then—there was the *Stellaris* before him, come out of another set of dimensions and another universe to obey his orders.

He rushed into the air-lock, shaking with the feeling of imminent need. "A torch!" he commanded feverishly. "A cutting-torch! Make it quick! Speed! For the love of—"

He took the tiny, deadly instrument and raced back with it. He began fiercely to cut through the plating of the pyramid which was intended to kill any who opened it in the obvious way and signal the tampering to a race of killers. The metal smoked and a thin line of parting showed. He cut through swiftly, counting somehow upon the inner identity of this pyramid to the other he had opened.

It was identical. He crawled inside, dragging the torch, scorching his clothing and legs on the hot edges he had cut. Again he cut at metal ruthlessly. He snapped commands and the electrician fed in one long section of bus-bar. He welded it to a connection. He welded a second semi-flexible bar.

He backed out and barked to the painter to get string, a plumb-line, anything that was cord. And not to let anybody come out of the ship! Even as he commanded, he was feverishly using the torch to connect the snaky bus-bars from the pyramid's interior to the preposterous-seeming device mounted on the odd small vehicle.

He finished and cast aside the torch to attach the string with unreasonably shaking fingers to the switch which was so ingenious and so easy to throw and would handle so monstrous a current.

"Okay," he barked. "Get back and in the ship! *Run!*"

He backed toward the *Stellaris* himself, paying out the string.

Then he heard Kit crying out. "*Rod—Pyramids!*"

Out of the corner of his eye he saw a mote in the sky at the edge of the horizon. But he dared not hasten. He paid out the string and paid it out. He stripped off his coat and knotted the end of the string to it. Then he ran.

There were voices babbling about him as he focused a tractor-beam on his coat, a hundred feet away. With the least possible trace of

power he saw the cloth stir.

"Go ahead!" he roared.

He stared out the vision-port. There was not one pyramid in sight but three. They came drifting onward and downward, lower and lower, toward the city. The *Stellaris* must be visible. They would turn their beams on it as a mere routine precaution.

All visible things turned red, flashed through all the colors of the spectrum to violet and dead-black. The *Stellaris* was in other-space, the dark universe.

Then Rod raised the power on the tractor-beam, drawing his coat toward him in another set of dimensions. He heard a faint tinkling sound—the coat's metal buttons were smacking forcibly against the ship's hull.

Then Rod wanted to be sick—from relief.

## CHAPTER VII

### *Ambush*

**T**IME passed slowly indeed in the other-space. Rod found himself doubting the time-rate of his watch. But a watch did keep the same time in the dark universe as in normal space. He knew it. It had been verified on his three interplanetary trips and in the original testings of the *Stellaris* when her force-field coils were first tried out. But the watch hands moved slowly, very slowly.

Kit looked at him with anxious eyes. There were lights in the ship now but the feeling of weightlessness kept a certain nagging impulse to panic always very close. Still, Kit had been so much more fearful for Rod that the eerie sensation of floating in emptiness could almost be ignored, now that he was safe on board.

"What'd you do, Rod?" she asked.

"I think," said Rod, "that I knocked off the looters and the creatures in the three flying pyramids we saw. I hope so! I even think I did it with one of their own weapons. I hope very much that they haven't any defense against it. I can't imagine one."

"*Their weapons?*" Kit said, startled. "You mean you think you made the same thing they used to kill all the people on this planet?"

"And the Martians," said Rod grimly, "and probably plenty of other races that got civilized enough to be either dangerous or

worth looting. Remember, you suggested that the weapon a space-ship turned on us might be supersonic-sound waves?"

"Y-yes," said Kit uneasily.

"It couldn't have been exactly sound-waves. Not in space. There was no air—or any solid to carry them. But we use tractor beams as if they were cables to pull things and pressors as if they were beams to push things with. I figured that they might have made a gadget that alternated between sending tractor and pressor beams.

"It would send a thin slice of tractor, then a thin slice of pressor and so on. That would go through space. And when it hit something solid it would generate sound waves in it. If the slices were thin enough and alternated fast enough they'd make supersonic waves—such as you suggested—in anything they touched.

"Air would vibrate in the supersonic range. So would water. So would the bodies of any living creatures such a beam struck. It would break up ceramic ware and not break plastic or metal. Sent from one space-ship to another, it would kill all the crew of the ship on the receiving end. Sent from a ship down on a city—"

Kit turned pale.

"They could—stay out in space and send beams down at a city and everybody'd die! Oh, Rod!"

"Apparently they did just that," said Rod. "Anyhow, that's the sort of gadget I made. There were bus-bars and a monstrous thing that works like a vacuum-tube in the building where we saw the televisions.

"Joe and I—Joe's the electrician who was with us—fixed up a pressor-beam generator and put in a feed-back to the tensor-plate. It starts to make pressors, the feed-back makes it shift to tractors, then the feed-back makes

it shift back to pressors and so on. It'll generate supersonic frequencies all right! Simple enough too," he added grimly, "once I had the idea."

"But—"

"Power for it? There was an isotopic generator in the building with the televisions, too. Probably better than the one we have on the ship here. But I did better than that. I knew there ought to be a power-storage unit in the booby-trap pyramid we so carefully haven't touched.

"I cut into that pyramid, hooked up that power to the gadget Joe and I had put together and tied a string to the switch. I focused a tractor to pull the string after we'd come into this space. The stuff it generated couldn't hurt us here. Tractor and pressor stuff would have to be focused to come into this universe from ours."

**H**E MADE an unconscious movement and rather absurdly floated away from his former position. There was no gravity here. There was always the sensation of interminable fall. While constantly aware of the fact that it was weightlessness, not dropping, it was endurable enough. But nobody would ever be able to sleep where gravity was not.

"To finish the picture," said Rod after a moment, "the power-storage unit has probably some hundreds of millions of kilowatts of power stored in it. I don't know just how fast it'll discharge through our gadget but there's a choke-effect there to slow it up.

"My guess and my hope is that my gadget generated the pyramid-folks pet murder-frequency stuff for several successive minutes and that those who happened to be around have lost all interest in looting—and in us."

[Turn page]

## AN AMAZING EPIC OF THE ENDLESS FUTURE!

# FLIGHT INTO YESTERDAY

*A Novel of Strange Destiny*

By CHARLES L. HARNES

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"If it hit them," said Kit.

"It did," he assured her. "We set it to radiate in all directions. The faster the juice ran out, the more deadly that beam was. I can't guess it's maximum range but it should be strong enough anywhere on this planet!"

In that estimate he was too conservative. Actually the lethal effect of his device had extended rather more than a planetary diameter beyond the surface on the far side of the world. It had lasted for six or seven minutes and it had wiped out all pyramid-creatures within that limit.

Rod, however, was uneasy. His experience of the alien race was not enough to let him know their resources, and he could not calibrate or measure anything he used.

At the moment he worried mainly over the possibility that the aliens might have some defense against the weapon he thought they used for massacres. But he knew, too, that the danger could be greater than that and of a quite different sort.

As a matter of safety he kept the *Stellaris* in other-space for twelve hours. If the aliens had a defense against his weapon they'd expect the *Stellaris* to reappear immediately the weapon was used. But if twelve full hours elapsed they would think the human ship had fled. So he waited.

But time passed very slowly until what might be termed social life within the ship began. The four girls who'd tended the air-purifier system had been classed officially as assistants in biology, and were more or less inclined to feel superior to mere painters and arc-welders and electricians. Some of the men, too, were middle-aged and obviously family men.

But one of the arc-welders was good-looking and one of the painters displayed virtuosity on the mouth-organ. Also there was some food aboard ship and there was at least a precedent for expecting to set foot again on a planet with breathable air.

Also there were the lurid tales of riches and jewels and incredible luxury in the empty cities of the planet to which they were still anchored. So, during the tedious wait, barriers broke. Music began somewhere off in the ship. There were voices. There was even laughter.

Kit went to see while Rod sweatingly tried to make calculations and draw diagrams on a memo-pad which had no weight—and while he himself floated head-down in relation to a

normal position in the control-room. Kit drew herself lightly along the hand-rails which ran on floors and ceilings and side-walls alike. She came back smiling, floating with extraordinary grace in mid-air.

"Rod! You ought to see!" she told him. "One of the painters has tied himself in place with string. He's playing the mouth-organ and they're having a dance! It's like a Virginia reel in three dimensions! Everybody's got pieces of cardboard and they're using them like wings to fan themselves around with in the craziest set-to you ever saw!"

Uproarious laughter sounded in the ship, which floated in an illimitable emptiness of darkness—in a universe in which no living thing could dwell—alone as surely no human ship was ever alone before—in a cosmos without a single star.

Rod said restlessly, "That's good, Kit. Go and watch if you like. I'd better not. Anyhow, I'm going to try something."

There was reason for his reserve. He was, perforce, the captain of the *Stellaris*. As such he could join in difficult labor and should share in any danger. But he must remain remote if all his decisions were to go unquestioned. And it was necessary for him to make the decisions. If he relaxed to mere sociable behavior his leadership would no longer be based upon the mystery of commissioned authority. He would have become merely another man.

He pulled himself to the engine-room. Restlessly he set the tractor-beams—those not in use for anchorage—to fan out in all directions through this other-space. Practically nothing was known as yet about the dark universe. Light traveled faster there and inertia was less. Incredible speeds were possible.

**S**O MUCH was known, and nothing else. The other-space could be a mere incalculable emptiness, without the most minute particle of substance anywhere in it. Yet in theory a cosmos without mass could not exist. A closed universe could not be closed without substance to make the gravitational warp that would close it. So there must be matter of some sort.

But Rod turned on the tractor-beams and fanned them out, merely to be doing something. The odds against any solid object within the distance the tractor-beams would cross within a few hours—even at the tre-

mendous speed of radiation here—were enormous.

He went back to the control-room, looking at his watch. Kit rested lightly in a screwed-down chair, staring at nothing. Her face was utterly dismal.

"I—er—I put on the tractor-beams just to see if there could be anything solid around," he told her, pretending not to see her expression.

She did not answer.

"I'm hoping," he said awkwardly after a moment, "that we've wiped out those pyramid-makers and that we'll be able to go through one of their ships and pick up some of their stuff. In this space those projectors of theirs that shoot beams of light should be handy. I'd like to know what kind of drive they have—and they've got a sort of flame-pistol that could be useful."

Kit's lips trembled. A tear appeared at the corner of her eye and did not run down her cheek because there was no gravity to draw it. It blurred all her vision and she shook her head to clear it. The tear-drop flew off into the air as a tiny round globule. She gulped.

Rod said helplessly, "I feel like a scoundrel, Kit. I act as if I didn't think about you at all."

"You don't think of me," said Kit. "And—and we're likely to be killed any time and—"

"If you looked happy," said Rod doggedly, "as if we were being romantic, the four other girls would envy you. And if romance breaks out in this ship it will be bad! There are ten men and only five girls. Right now it doesn't look as if we've much chance of getting back and if ten men get romantic over five girls—"

"S—some of the men are m—married," said Kit.

"It'll be hard for them to bear that in mind after they give up hope of getting back home and know they're some thousands of light-years away."

Then Rod said grimly, "I look at it this way—we're in the position of people who were shipwrecked in the olden days. But we've no hope of being rescued. No friendly space-ship will ever run across us! So we've got to load up with food. We've got to get weapons. We've got to get tools.

"And if we can't find our way back to Earth—the chance is slim—we've got to find a planet these space-murderers aren't in-

terested in, one that we can settle on. We may have to turn ourselves into a colony and spend all our lives somewhere we can't even guess at yet. Right now we've got to keep from doing anything that will start dissension on board."

"You could say something nice once in a while," said Kit miserably.

"If I did," said Rod, "I wouldn't want to stop at that."

The ship stirred—slightly but definitely.

Rod dived for the corridor to the engine-room. The movement of the ship could mean but one thing. The tractor-beam had touched something solid. Even hurtling through the air he glanced at his watch. The beam had been on for fourteen minutes. That would mean a hundred and sixty million miles in normal space. It might mean ten or twenty or a hundred times that, here. It might mean anything or nothing whatever.

He reached the beam-projectors. Again carefully leaving the anchor-tractors untouched, Rod cut down the power of one after another of the rest. Another stirring. The beam which had struck something was identified. He put pressors in parallel and sent them out to cover the direction.

It was again fourteen minutes before a pressor hit the unseen object the tractor tugged at. Rod took a deep breath. It wasn't coming this way, then. Not fast at any rate.

**H**E SETTLED down to finicky, delicate manipulation. It was, in a way, ridiculous for him to try to locate and focus a beam on something of unknown size—an unguessable but enormous distance away—when it was somewhere in a fifteen-degree-square arc of space.

It took fourteen minutes to discover whether an individual beam was even pointed in the right direction. But he had a dozen beams he could use, adjusting them in sequence, and he could shift the unfocused beams to find when they slid off the object.

The three-dimensional dance ended when the painter ran out of breath with which to blow the harmonica. An impromptu theatrical performance began. There was a painter who fancied himself as a tap-dancer. He essayed to demonstrate. With no weight to hold him anywhere his antics were unpredictable even to himself.

The spectators held fast to handrails on

walls and floor and ceiling. The girls shrieked with laughter. The men howled. Somebody essayed to juggle. It was impossible. Nothing came back to his hands. The laughter tended to grow hysterical.

It was a wholesome enterprise and it was all very well as long as they could remember that they were not falling into endless nothingness. These antics helped them to remember. But the instant that thought ceased to hold the center of one's mind, muscles tensed in panic, eyes widened and breathing became difficult because one was falling, falling, falling. . . .

It was long hours before Rod heard the curious crisp noise within a pressor-coil which told that it was locked. It was focused upon something invisible and unspeakably remote in the absolute black of other-space. Rod looked at the beam-mounting. He made a tiny mark. After half an hour, there was no change in the long-range adjustment. Whatever the object was, it had no great velocity either toward or away from the *Stellaris*.

If it was a—well—a heavenly body, a burned-out sun in a universe run down, it might be useful. So Rod left a beam on it, drawing the minimum of power. He went floating along the corridor to the control-room and there Kit looked at him steadily, a sheet of paper in her hand. She no longer looked unhappy?"

"Rod," she said, "do you remember writing this?"

Rod flushed. He'd written her a note before going out to make the death-beam generator. The *Stellaris* was to vanish from the planet's surface while he worked—it was to hide in other-space because there were alien looters on the unnamed world.

Pyramid-ships might come to this city. They might beam any area they intended to land on, as a matter of routine precaution. If they did he and the other two men on the planet's surface would die. So he'd written a note for Kit to find in case he didn't come back. And she'd found it.

"I didn't think to tear that up when I came back," he said uncomfortably. "Just—well—forget it, won't you?"

"Hardly!" said Kit. She smiled tremulously. "If you really feel this way about me, I want to remember it. I won't doubt, any more!"

She smiled at him. The temptation was irresistible. But the electrician named Joe

came floating into the control-room, flapping two large sheets of cardboard for wings. He braked expertly with them and grinned.

"If I only had a harp," he said, beaming, "I'd feel like an angel for sure!"

"I'm getting set to go back and see what our trick did to those looters and the pyramid-ships," Rod told him, momentarily confused.

Joe raised his eyebrows and made no comment. He fanned himself to a wall and caught hold of a hand-rail.

"I'd like to spring an idea," he said.

"Go ahead!"

"Suppose we fix up a couple gizmos like the one we made back yonder on the planet," said Joe. "Then we could put up a scrap if one of them pyramids came after us."

"Providing we shot first," said Rod.

"That's right," agreed Joe. "But suppose we tricked the circuit so the tensor-plate was choked? So when we turned on the juice nothin' happened?"

Rod waited, frowning.

"Then," said Joe, grinning, "if they turned a beam on us, our feed-backs, 'ud pick it up an' uncork our beam on them! They start shootin', an' automatic we shoot back."

"Good enough," admitted Rod. "Only we'd still die. That wouldn't kill their beams. It would just kill them."

"Then tie in our force-field switch," said Joe amiably. "They slap a beam on us, we shoot back an' go whammo into other-space. All automatic! A bear-trap. I don't like those guys!"

"I don't either," said Rod. He reflected. "Mmmmm. You've got something there. I begin to like it. I wonder if they have it."

Joe shrugged.

"It's not likely, Rod," Kit interposed. "They'll kill off other civilizations as soon as they have space-travel. You didn't arm your first ship and there was no plan to arm the *Stellaris*. Nobody'd be set to fight in their first space-ships.

"The pyramid-people have probably never had a real fight in their lives. They won't be looking for anybody to fight back, any more than a hunter expects a rabbit to let go at him with a blaster."

"Something there too," admitted Rod. "But they're probably scary at that. Most likely they started this murder business because they were frightened the first time their ships came upon another race. They wiped that race out because it scared them. Then

they looted its cities and found it paid off. Still, if they think that way . . ."

**A** CHILLY thought came to him. He felt small cold prickles running up and down his spine.

"Right now we've got to take a chance that we hit them hard," he said grimly. "Pass along the word that we're going back to normal space on the planet we found. And Joe—"

"Yeah?"

"Go down in the engine-room. I've got a little pressor locked on something in the dark universe. If I throw the force-fields back on, you put power into that pressor. Plenty of it! We'll want to get moving, and fast!"

Joe grinned, let go of the hand-rail and flapped blissfully across the room. He bounced off the doorway and went soaring toward the engines.

Shoutings went through the ship. There was a roll-call, so that the sudden return of gravity would not take anyone by surprise. Then Rod threw off the force-fields.

Weight came back, but no light outside. Rod blinked, then roared, "Lights out! *Quick!*" It was night outside on the planet, and the lighted ports of the *Stellaris* would show for miles.

It was seconds before the ship was dark again but nothing happened.

After long minutes Rod put Kit's hand on the switch that would send the *Stellaris* back to other-space. Quietly—it seemed strange to be able to walk—he went to the air-lock. He cracked it open. There was no sound anywhere. He stepped out into the night. The air was chill and many strange stars shone overhead. It was altogether eerie to stand in such strangeness on the ways of a city that had been murdered, on a planet that had no name, in the weird stillness of its night.

But night had not long fallen. On the horizon there was still a trace of luminosity. A single wisp of cloud, high up, glowed faintly in sunlight from below the horizon. But overhead the sky was deep-blue. Stars twinkled brightly.

And there was silence to crack the eardrums. Perhaps at the edge of the city where the jungle began, boughs and branches whispered in a night-wind. But here all was stillness. Everything was dead. As his eyes adjusted to the starlight the soaring, grace-

ful architecture took form in the dimness.

And then he saw one of the pyramids that had been floating overhead before the *Stellaris*—its improvised weapon radiating death—had fled into the other-space. The pyramid had come down out of control.

It had crashed into the side of a cliff-like structure and tumbled over again. It lay askew with one of its corners still caught in the gap its impact had made. Rod drew a deep breath of satisfaction. The weapon he'd made had worked. There was now no living alien of the murderous race upon this planet. But—

Something made him raise his eyes. Stars moved overhead. They moved visibly. Tiny specks of yellow incandescence shifted place among the many-colored distant suns. One winked out completely. Another suddenly appeared.

For an instant Rod thought of shooting stars—of meteors. But meteors do not move slowly. These things did. Especially, meteors do not move in geometric formation, arranged as a slightly skewed triangle which give the appearance from one viewpoint of a pyramid.

The specks were pyramid-ships—a space-fleet of the killer-race! There were literally hundreds of them and they approached the planet on which Rod stood. The flashes of light were sunlight reflected from their polished sides.

Rod went cold all over. But it was obvious enough, once he thought about it. The aliens who put up a pyramid on Calypso had the mentality of people who install elaborate burglar-alarms. It was part of a pattern of thought.

They did not think of mercy, so they would not think of watchfulness. Cold-bloodedness manifesting itself in unwarned race-murders implied a whole psychology. And a suspicion that had come to Rod no more than half an hour since was verified.

The aliens plainly took no chances. As they did not imagine friendly commerce—implying loyalty—between different races, they did not imagine loyalty or courage in their own. So a pyramid-ship was not trusted to meet and report upon emergencies.

As a power-storage unit and a transmitter was built into the traps they set for other civilizations, so similar devices were built into their ships. In the unthinkable event that one of their crews was wiped out by a race unknown to them the crew was not

depended on to report with their last trace of strength.

When the stick-like creatures in a pyramid-ship died the ship itself sent out a death-cry of radiation which could travel across half a galaxy. Perhaps there were relays to receive and transmit communications faster than the speed of light. When a ship was destroyed, a monstrous, overwhelming fleet could be sent instantly to avenge and destroy.

The winking specks of light moved on. Probably they would englobe the planet on which the looting-party had been destroyed. They might blast the planet itself out of existence—Or perhaps—

Rod ground his teeth. He'd made a mistake. He'd lost precious hours out of exaggerated caution. But he would not make that mistake again.

He went back into the ship to give crisp and savage orders.

## CHAPTER VIII

### *The Enemy*

**T**HERE was no alarm but the suspense itself was hair-raising. Joe the electrician and an arc-welder with a torch cut loose the generator of the deadly tractor-pressor radiation. Already there was a tendency to call it "the push-pull beam" instead of tractor-pressor or supersonic radiation.

While they did so Rod and two others assailed the fallen and apparently helpless pyramid-ship. They cut into its air-lock door—and gagged at the smell within. It was a living-thing smell.

It was, in fact, the personal smell of the aliens. It was indescribable and revolting. In all probability the aliens themselves were unconscious of it, as humans are unaware of the human smell which is so comforting to a dog. But this reek filled men with rage.

They went through the monstrous ship, hand-flashes flickering here and there. They were armed with nothing more deadly than spanners but they looked fiercely to see if anything remained alive. They ignored machinery and weapons and technical devices, seeking only dangerous life. They found none though there were many bodies.

They clambered out again and found the

vehicle they'd used as a beam-mount and trundled it to the *Stellaris'* air-lock door. They helped heave off the block of plastic which acted as a giant vacuum tube.

Joe the electrician observed casually, "Say! When we were fussin' around that pyramid we musta stepped on somethin'. Their little booby-trap got all hotted up and melted itself down. Okay?"

"Very much so," Rod told him. "They'll think somebody opened it, or maybe that it went off of itself. But they won't see where we cut it open. It should puzzle them a bit. Come along!"

With two others he set the little vehicle off at top speed through the dead city's streets. His spine was literally crawling with apprehension but he went on grimly. If the newly-come fleet simply surrounded the planet and at a signal blasted it with the deadly push-pull radiation, every square inch of the planet's surface would become death itself. Nothing could live. It could happen at any instant. And there was no conceivable defense against it.

But he'd lost twelve hours, waiting in other-space out of apprehension, overestimating the pyramid-ships' means of defense. Now he knew that a race so careful of its own life that it practised murder as a trade would be a very fearful one. It was likely to overestimate the enemy that had struck at it.

Instead of a manned ship it would probably send a robot—a drone—to investigate the weapons used against its vanquished ships. If the drone itself were destroyed the fleet would withdraw until some counter to the new weapon could be devised.

But Rod had no new weapon. He had only—he believed—the instrument by which the aliens did their murders. Even that needed to be powered by apparatus of their construction. He could not destroy anything now. So the aliens would find nothing in particular to alarm them, though it would be some time before they felt safe in landing.

Still, they could be examining the surface of the planet with telescopes—perhaps electron-telescopes—and they might detect the *Stellaris*. On the other hand they'd have to use infra-red on the night side of the planet and infra-red does not give good definition. The ship and its tiny landing-party might—might!—be safe until more light came with the dawn.

He had to risk it. He drove to the power-



station. The four men cut free the isotopic dynamo and manhandled it to the vehicle. They loaded up four television-machines. They went racing back. The other load had been carried in through the air-lock. Now this load was put on board the *Stellaris*.

"I'd like to have more food," said Rod, "but we can go on short rations for awhile. All right? Seal her up!"

He took post in the control-room. Joe had connected up more switches, but there were still no instruments. He released the anchoring tractor-beams and pushed the ship up on pressors. He maneuvered above the tumbled pyramid-ship. He sent down tractors and locked them.

The *Stellaris* sank as the strain came on, but he fed more power to the pressor-beams which held up the earth-ship on unsubstantial stilt-like legs. Presently the pyramid-ship stirred and floated free. Then Rod maneuvered it very gently up against the *Stellaris'* bottom-plates and pushed up to five thousand feet.

**F**OR long minutes the ship hung there, swaying and oscillating with a soggy, burdened motion. But Rod had more controls to set by hand, since the ship was not one-tenth wired for navigation. There had to be tractors—unfocused—set to overlap in a globe all around. The force-field generators had to have certain constants changed.

That was really the ticklish part. Rod had designed the generators but he sweated as he worked. And as the crucial instant drew near he felt a despairing certainty that, from somewhere in the star-studded vault overhead, a death-beam would strike down just before he took his final action.

But it didn't.

When he raced to the control-room and glanced out the ports he saw a shimmering, faintly luminous horizon all about and many stars above. He saw far-distant darkness, which was this world's jungle, and at one place a sea.

But directly under the *Stellaris* a huge flat plate of polished metal shut off all sight of the ground. It was the pyramid-ship. Rod threw the master tractor-switch and, as the ship lurched violently, he threw the force-field switch hard over.

It was all familiar, now. There was only blackness outside and there was no weight whatever, but there were new strange grinding noises. They were against the earth-

ship's hull. They were rhythmic and reverberating.

"We made it," Rod told Kit, swallowing. "I was almost sure we wouldn't have time."

Kit held fast to a hand-rail to keep from floating free. "What's that grinding?"

"That's our friend, the enemy," he said. "The force-field generators were intended only to drop the *Stellaris* into other-space but I designed them so they could be changed. And I just changed them.

"I had them spread out to make a spherical field a half-mile across—well beyond our hull. So when they went on, they dropped the pyramid-ship and everything else within a quarter-mile into other-space with us."

Kit frowned bewilderedly.

"But can we *do* anything with it?" she asked. "There's no air outside and we've certainly nothing like a space-suit."

Rod grinned a little, as he wiped sweat off his forehead. "We brought air with us."

Joe the electrician came floating seraphically into the control-room.

"Near as I can figure," he reported, "we got five-six hundred feet of extension cable we can hook together to get light in that ship those critters ain't usin' any longer."

"But—" Kit grew more uneasy.

"We brought a half-mile sphere of air with us," Rod repeated. "And we've got tractors pulling in every direction. They act the same as gravity. There's a vacuum outside, of course, but there's a vacuum outside of every planet.

"Gravity holds air to the planets. Tractors are holding air to us. We can walk around on the outside of the ship if we want to. We couldn't even fall off! The tractors would pull us back, as they pull back the air."

With Joe he went to the air-lock. He cracked the door. No hiss of escaping air followed. He opened it wider. There was air outside. The *Stellaris* and its captive were in effect a miniature planet, holding an atmosphere against the emptiness of space by means of tractor-beams.

"But we've got to work fast," Rod said grimly. "I wish we had warm clothes. This air will be losing heat to space and there's no sun to put it back. We'll be lucky to have an hour. Let's go!"

Carrying a line, with Joe uncoiling flexible light-extension wire behind him, Rod stepped out of the lock. A huge, glaring bulb glowed on the end of the wire. The tractors held them fast against the *Stellaris'*

outer skin. There was the one fierce electric-light in an entire dark universe.

ONE tiny spot of illumination in hundreds of thousands of light-years—it showed the brightly-polished flat plating of the alien ship. A painter poked his head out of the air-lock and shivered, then gingerly followed. An arc-welder came too, carrying the tools of his trade.

They cut through the skin of the other ship, since the air-lock was no longer convenient. They pulled away masses of insulation. They cut through another skin. The repugnant reek of the pyramid-people filled their nostrils.

"We'll try to turn on their lights," observed Rod." They must've had them! And then we start to loot the looters. Joe and I will hunt for technical stuff. The rest of you send back tools, anything that looks like books on fabrics—anything that could be interesting or useful. And work fast!"

Joe strung lights and hunted for a way to turn on the obvious sources of illumination in the first compartment they had reached. The lights remained obstinately off. Joe cut one loose and turned it over to be sent back to the *Stellaris*. Rod went on to more important matters.

The ship was amazing—not because of its development but because of its crudity. Its pyramidal form had doubtless been chosen long since because of its rigidity and because reflecting surfaces at specific angles had advantages when it was desired to go—say—near a sun.

But the ship was not the work of a really civilized race. There was no trace of artistry anywhere—not even the clean smooth lines of purely functional design. This ship looked as if it had been designed by a construction man who thought only of how to put it together. Everything else had been ignored.

It was a job that ignorant or unskilled labor could assemble and there was no particular thought for the comfort of its crew or the psychological effect of good design. The dead members of the crew were not prepossessing. Their faces were almost without features and were wholly without expression. They seemed fit occupants of a vessel designed for strict utility and nothing else.

Rod gained an increasingly strong impression that this was a case of a barbarous race suddenly acquiring a weapon they were not prepared to use except as barbarians. It ap-

peared that just as mathematics was thousands of years ahead of technology in ancient Greece, this race had suddenly developed a specific technology thousands of years ahead of every other part of their civilization.

Used as they had used it, such an advantage would almost or quite stop progress in every other line. They would not develop a civilization of their own as long as they looted other civilizations.

He looked at the ship's weapons. He found only the push-pull beam and he'd designed it better than they had. The engine-room was absurdly simple and utterly cryptic but even there he saw clumsiness in such items as the grouping of bus-bars.

The source of power, though, did baffle him. All bus-bars ran from a triple plate of glass or plastic which had two metal plates between its leaves. It looked like a primitive condenser but apparently it supplied all the power that was used in the ship.

IT was dead, now. There was no potential across it but there could be no other reading of its function than that of power-supply. Cryptic as it was Rod had it cut loose and sent it to the *Stellaris*.

The drive was equally crude and equally improbable, until he looked at it twice. Then he held his head. It was simply a pressor-beam fined down to a needle-point and aimed at an infinitesimal hole in a metal plate.

The pressor-beam would exert a pressure of hundreds or thousands of tons upon the center of an opening only thousandths of an inch in diameter. There was a not particularly good gas-flow regulator which governed the flow of a tiny trickle of gas to the opening.

"My sainted aunt!" said Rod bitterly. "Look at it! We could have had space-travel this past fifty years! Interplanetary travel, at any rate! They let gas flow to this pin-hole and push it through with a pressor-beam! It's a pressor-beam rocket!"

"Millions or billions of tons to the square inch pressure on the escaping gas! They'll get jet-velocities close to light-speed! Get this to the *Stellaris*, Joe. We'll use it, though I'm going to be ashamed. But they get more than light-speed in their ships, Joe! How'd they do that?"

He went prowling. He found the self-acting signal-device which sent a thunderous message of despair when the ship went out

of action. Simple enough, save for the apparatus which used up the energy. He could not guess at the type of radiation which was produced. But nine-tenths of the things he saw were behind comparable human devices.

Men could do much better with every contrivance he understood and he suspected they could do better with the rest. This race had been enough ahead of the races it had murdered never to have to extend itself. So there was a flavor to the entire culture. It was barbarous and unpleasant and crude and revolting. It figuratively stank as its possessions did literally.

Joe the electrician tried to draw his attention. He waved him away. Other men spoke to him and he paid no heed. He searched feverishly.

The light-guns were simple. Men could make them. He found something that was obviously a type of radar. There was a vision-screen of sorts. But he hunted desperately and in vain for star-maps and for navigation-instruments.

The nearest thing he found to them was a chest from which a fierce heat still poured and which was a chaos of melted and churned-up metal and charred stuff like paper. Nothing could be made of it. It might be—it could be—that all star-maps and navigational data was automatically destroyed when the signal of despair was sent off by a shattered ship. If so, it was still more proof of the murderer-psychology of the race.

Then Kit shook his elbow insistently. Her face was white and pinched.

"You've been here two hours, Rod! It's cold! The moisture's all frozen out of the air outside the ship. The tractors pulled it down as snow! Now the air's lost so much heat it's apt to freeze too!"

Rod said harshly. "You should have stayed on the *Stellaris*! Why'd you come?"

"You wouldn't listen to anybody else!" said Kit desperately. "They said you pushed them away and kept on hunting like a crazy man! When the air freezes you can't live!"

He stared at her. Her breath was a white steam. She shivered violently. There was already a thin layer of frost on her clothes.

"All right," he said sullenly, "but I want to know—"

Angrily—angry at his own incomprehension—he led her back to the opening in the pyramid-ship. There was every seeming of gravity here, created by the tractors which

held an atmosphere.

Rod stepped out on the *Stellaris*' skin and there were feet of feathery snow on it. It was unbelievably cold. There was no heat in the dark universe and its emptiness sucked greedily at heat in objects from a living cosmos.

Joe stamped and chattered in the air-lock. When Rod handed Kit in he cut the cable that had furnished light in the alien ship.

"W-we got more cable from them," he gasped, "an' we got to close this lock! I'm glad I ain't a brass monkey or this cold'd ha' done me dirt!"

The outer airlock door closed. The inner one opened. There was warmth and light, and a slight pervading taint in the air from the objects the aliens had owned.

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## CHAPTER IX

### *War Basis*

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**F**IVE minutes later Rod grimly cut off the tractors which had held an atmosphere in mid-space and an enemy space-ship with it. He found sardonic amusement in picturing the effect of that gesture upon the pyramid-folk.

The *Stellaris* still had a beam locked on the planet of the dead cities. Its power was low, but she would not be too many millions of miles away if she went back to normal space now. And the air she'd brought into the dark universe would return to normal space immediately it expanded beyond the force-fields.

There would be a sudden, violent, astounding irruption of vapor in emptiness, somewhere in sight of the planet. And a comet's tail can contain no more than a mere few cubic inches of gas, which yet is expanded and ionized and visible as a trail of hundreds of thousands of miles.

A half-mile sphere of air, expanded suddenly, should make such a sight as the stick-men had never seen before. It should fill them with enormous apprehension, simply because of its strangeness and because it followed closely on the destruction of at least three of their ships.

If they investigated and found the gutted pyramid-ship, which should go back to a star-filled cosmos somewhere near the air-

cloud, they should be more uneasy still. Because they'd find their ship looted only of sample objects rather than of all its contents, and they'd realized that it had been flung contemptuously away as worthless.

But there was that loot to examine. It was more than ever unfortunate that the *Stellaris* had no gravity. The booty floated about irritatingly and those who tried to explore its possibilities floated too.

The primitive-seeming condenser remained inscrutable, though its power-leads had surely carried an enormous load. The sample light, however, glowed brightly when connected to the *Stellaris'* power-lines. But Rod was scornful.

"Mercury-vapor," he said contemptuously, "with a phosphor in the tube around it! We stopped using that sort of thing fifty years ago!"

The drive was again irritating. To all intents and purposes it was a rocket with a jet-speed astronomically high because a pressor-beam was used on it. The light-guns could have been made on earth. The radar set had elements of novelty but Joe and Rod agreed that men made better ones. The vision-screen was not nearly as good as the ones in the dead city. Rod pushed himself away from all of them.

"They had a drive and a push-pull beam, both of which were quite within our reach," he said sourly. "Their power-supply is over my head and undoubtedly they had some trick for faster-than-light travel. But that's all! In two months we could wipe them out, given this stuff back on Earth! Since we can't get back to Earth we've got to do what we can right here!"

The other things taken from the ship, being non-technical, seemed less important. But there were bales of soft, lustrous fabric, which the girls of the air-plant oh'd and ah'd over. There were chests of prismatically glistening ware of unfamiliar shape—household luxuries of some sort and possibly tableware.

There were jewels. There were art-objects portraying flowers of exquisite delicacy and people—at least, they wore garments—which were neither the people of the planet of the yellow sun nor pyramid-folk nor any other known race.

"Those fiends didn't make this stuff," said Rod grimly. "This must come from the cities of some other poor devils they've wiped out!"

The faint taint of alien smell made his hackles tend to rise. There could never have been friendship between human beings and the people of the pyramid race under the happiest of auspices. This smell made enmity inevitable.

"We'll get to work," said Rod distastefully. "I hate to use a trick of theirs—but we need that drive."

Groping with tractor and pressor-beams was not the most efficient form of space-travel, so the alien drive was to be installed. It was simple enough to float it to a sternward position and weld it in place.

It needed a tiny opening for the ejected gas-particles to escape from but their speed would be so great that they'd bore their own exit. It was not so easy to weld braces and a mounting to take up its thrust. Rod left two welders swearing at the difficulty of working when they had no weight.

**K**IT smiled at him wryly. "Somebody has to take care of you," she said defensively when she saw him frowning. "And you'd have stayed there until you froze! I had to come after you!"

"Thanks," he said heavily. "I'm just worried because there was some stuff on that ship I didn't get. Most of their gadgets were primitive and we can do much better. But—"

"Did you find out how they got their artificial gravity?" she asked hopefully. "I get awfully tired of just floating."

"They didn't have gravity," he protested. "But I could walk in that ship," she insisted. "I did!"

"That was our—" Rod groaned. "I'm stupid! I'll be back!"

He went to the engine-room. He pulled Joe off the drive-installation and together they set up a tractor in the extreme sternmost compartment of the ship. They widened out its beam. In less than twenty minutes objects and persons within the *Stellaris* began to settle gently toward the stern.

Thirty seconds later they had perceptible weight and after a minute weight was practically normal everywhere in the ship. Rod climbed then—though the ship was in other-space—back to face Kit in the control-room.

"We could have had gravity all along," he told her ruefully. "I only had to put a tractor in the ship's tail to pull us all toward it. Joe's setting up a pressor in the bow to neutralize it outside. So we've got gravity.

Now what?"

"Nothing," said Kit wistfully, "except that it would be nice to stop worrying and think about ourselves sometimes."

"I believe," Rod told her, "there's an outside chance even of that!"

He inspected the small tractor locked on the planet of dead cities. Locked as it was, its mount adjusted its focus to allow for varying distance and it was possible to estimate the distance from the planet to the spot at which the *Stellaris* would return to normal space. It was too close. He put power on the pressor. Joe came in, uncoiling a power-lead.

"The jet drive," he said crisply. "You got a switch you ain't usin'?" He connected the cable and scrupulously labeled the switch.

"Joe," said Rod. "Remember your idea of a push-pull beam that would shoot back if we were beamed? Listen!"

He spoke carefully. Joe grinned.

"Sure! I'll fix it. Too bad we ain't got more stuff to work with."

"You might use that isotopic generator we got from the city," Rod suggested. "We can hardly run a cable out."

"Mmmm," said Joe. "It'd be a kinda good idea to try out that power-gadget from the pyramid. I got an idea about that. There's nothin' there to supply power. Nothin's used up. Nothin' breakin' down. Nothin' to happen. But it gave 'em power—in regular space."

"It's dead now." Then Rod stopped. "You think it could be a trick receiver of power from somewhere?"

"That's my hunch," said Joe. "Maybe they got broadcast power."

"Galaxy-wide?" demanded Rod skeptically. "How?"

"You guess," said Joe, grinning. "I bet

it's a simple trick, though—like their drive."

He nodded and went back toward the engine-room. Rod looked at his watch. There was gravity on the ship now and they had at least twice the power they'd started out with. They knew how to make weapons at least equal to any the alien pyramid-folk possessed. He remembered the pencil-beam of heat the looters had used to cut out a wall in the dead city. He'd have to look into that too. Joe was busy. His job would take time.

**R**OD hunted in the loot for a pencil-beam gun and found one. On the way back he stopped to watch Joe at work on the automatic push-pull weapon. Joe had only such tools as had been on the ship during its construction but he was doing a good job. Rod watched approvingly.

"Joe," he said after a moment, "if you sliced that tensor-plate into segments and fixed the feedback so—"

He illustrated.

"If you do that," Rod finished, "it will shoot back only in the direction from which it's shot at. All the power'll go into a relatively narrow beam." Then another idea struck him.

"My sainted aunt! Better than that, Joe, set the feed-back like this! There's no pull on a tractor until it hits something. When there's a tractor going out from every segment—better put a commutator on and run through them in turn—when there's a tractor going out and it hits something, that will turn on the push-pull beam! Full-power too!"

Joe grunted. He looked at Rod with a wry expression.

"It's a bright idea all right. We're turnin' the old *Stellaris* into a warship, sure enough. But we won't be good company

[Turn page]

## ANTON YORK DISCOVERS THE SECRET OF IMMORTALITY

IN

# THE CONQUEST OF LIFE

An Astonishing Complete Novelet

By EANDO BINDER

Next Issue's HALL OF FAME Selection!



for nice people. We're goin' to go roamin' around like a mad dog?"

"A shunt here will take care of that," said Rod. "With the shunt cut in it will ring a bell when a tractor-beam hits. With a power-switch in parallel we can make it shoot back and then tell us what it did."

Joe looked relieved. "Y-yeah. I see that." He grinned twistily. "I'd hate to go around spittin' death-beams just automatic. We'd wind up kinda lonesome, seems like."

Rod went back to the control-room. But the weapon that was developing stayed in his mind. He went back again and asked Joe to make an adjustment so the push-pull power-feed could be cut off from any desired segment, so that one part of the weapon's range could be left unblasted if desired.

"I'm acting," he said, almost embarrassed, "as if I thought we might find friends."

Joe grunted. "Well? Those guys in the pyramid-ships are tough babies. Maybe the folks they killed were good guys. There's usually a good guy somewhere to make up for a bad one."

Then he added, "I'll have this thing ready in a coupla hours. You know how we're goin' to mount it outside? No air there now!"

Rod sketched out a notion for that too. Joe grunted again.

"That's half an hour more. I'll set those welder-guys workin' on it."

Back to the control-room again. Rod paced up and down, no longer really conscious of the novelty of gravity in space. The ship began to feel like something other than a hulk navigated by makeshift means.

He began to feel less like a shipwreck victim and more like a man in command of a ship. He began, indeed, to think in terms of what could be done to the pyramid-race, instead of the peril they represented.

It was nearer three hours than two before Joe reported the new weapon finished. It had called for very careful work by practically every man on the ship and the using up of I-beams intended for interior partitions.

When it was complete, Rod threw the switch that meant a return to normal space. There was practically no change in sensation as dots of light appeared in the vision-ports and ran through all the colors of the rainbow before they settled to their usual appearance as stars by myriads on every hand. The yellow sun was now very far away. It was only the brightest distant ob-

ject in the heavens.

They opened the airlock door, with a tractor covering the opening so no air would escape. Focused pressors pushed the new device outside and maneuvered it delicately to a new position. From the ports Rod guided it to the *Stellaris'* nose and anchored it. And then a tiny tractor pulled back the switch that set the generator into action and the *Stellaris* was a fighting ship.

For the first time Rod applied the jet-drive. The ship gave a mighty surge forward.

It headed for the yellow star—and battle.

## CHAPTER X

### *Battle!*

**T**HEY had seen four planets on their first approach to this solar system. One, a world all ice from pole to pole, they had by-passed for the next world sunward. There were two others still nearer to the sun. Rod regarded them speculatively as the *Stellaris* drove toward the world of dead cities.

"I think," he said meditatively, "that I'm going to take a look at those planets—if we live through this."

Kit stood beside him.

"And somehow that settles it. Do you realize, Rod, how completely you are expected to decide things? One of the painters said we should be trying to find our own sun or else hunting a planet we can settle on. But Joe said he was crazy and there wasn't even an argument. You wanted to fight, so there simply wasn't any question about it."

"There's a reason for us to fight," said Rod curtly. "Nobody can guess the size of the pyramid-ship fleet but it's surely all hunting us. If we stay in one place, fighting, maybe they'll think we're survivors of the race they murdered."

"We have to try to make them think so for the sake of Earth. If they decided they'd better start a general massacre of all the races we could come from, Earth would certainly be included. And there's no faintest preparation to stop them back there."

Joe came climbing up from the engine-room. "That thing that looks like a condenser," he reported amiably, "it works.

It's hot now—plenty of power. I hooked it up an' we're runnin' on it."

"Then unhook it," commanded Rod sharply. "Get back to our own power! That doesn't work in the dark universe and we couldn't go into it or stay in it! Shift the leads back! *Quick!*"

Joe's mouth dropped open. He dived for the engine-room again. Rod's forehead creased. Minutes later Joe came back, crestfallen.

"Sorry," he said apologetically. "I thought it was kinda humorous to use their own power to fight 'em with. We're back on our own now."

"It's broadcast power, all right," said Rod grimly. "Somehow they can fill the whole Galaxy with power for their ships to draw on—unless they've found a source of energy that comes from nothingness itself."

After a moment he added, "I keep thinking about those inner planets. It's a hunch. It bothers me. It doesn't seem quite natural." He shook his head as if to clear it. "Those devils must have broadcast power of some sort, though."

A bell rang sharply. It stopped. It rang again. It stopped. It rang again. Rod and Joe tensed.

"What does that mean?" asked Kit apprehensively.

"It should mean that we blasted a pyramid-ship," Rod told her. "This is a long way out, though."

The sun was again a glaring disk. Something winked in its rays. It vanished. It winked again out a right-hand port. It was infinitely small and the effect was that of a bit of tinsel spinning in a bright light.

"Right!" said Rod in satisfaction. "A pyramid-ship sentry. Our beam-gun on the bow found him and blasted him, probably before he knew anything about it. His skipper probably had a spasm as he died and jammed his controls, so he's spinning."

The bell rang on monotonously, once in each revolution of the commutator which applied full power to each segment of the tensor-plate in turn, to blast any target the device might find. The pyramid-ship was getting a fresh lethal dose of the push-pull beam at each clang of the bell.

FORWARD the *Stellaris* bored. Presently the bell stopped.

Rod said, "Hm—we left him behind. We've got to allow for that! We can't have

them coming up behind us, where the ship fills up a space and the beams turned off."

"Will we beam the planets, Rod?" asked Kit.

"We've got a minus arrangement," Rod told her. "We don't shoot at anything over a certain range. I don't know exactly what it is but it's probably some thousands of miles."

The planet of the dead race was a perceptible disk now. It was the size of a pea. Time passed. It grew to the size of a marble.

The bell rang. Twice. It stopped and rang twice again—and again—and again.

"Two more of them," said Rod savagely.

Time passed. The double-ring stopped. There was silence. Then a single ring again, monotonously repeated.

"This ain't sportin'," said Joe, scowling, "but y'don't play sportin' with rats."

The planet was the size of a peach, now. There was an infinitesimal shimmering in space ahead—an infinitely thin sliver of what looked like gossamer came up out of the planet's atmosphere. It spread and formed itself into a geometric pattern of wavering specks of light.

"They know we knocked off their ships," said Rod. He was thinking aloud. "They've plenty of sentries out and when a ship dies, it squeals to the rest. Automatically. So they know we can hit, and hard. But they're forming up to fight us. How'll they fight?"

The *Stellaris* sped furiously toward the enemy formation. There was silence. Then Kit gasped.

"Rod, I feel queer—like that other ti—"

Rod's hand moved like lightning. The force-field switch crashed over. He said distinctly—with the ports all black—"The rats!"

They were in the dark universe for a bare second. He flung the switch back once more. There was no difference in the feel of things now, whether in other-space or normal. The *Stellaris* had dodged only momentarily into the other set of dimensions but in the other-space her velocity was enormous.

Rod, however, overestimated it. He had thought the *Stellaris* would slip back into the universe of stars beyond the enemy fleet. But she winked into being in its very midst.

There were shining pyramidal shapes on every hand. The bell burst into frenzied, continuous clanging. Glittering metal ships flashed past the ports so swiftly that the

eye could not focus on them.

But the *Stellaris'* weapon poured out death—the death of the pyramid-folk's own contriving—as the Earth-ship hurtled through the fleet of space-murderers and went on beyond them. She was through before they could train a single weapon.

Then Rod swung her about to face the enemy. The drive-jet fought her acquired momentum. The ship slowed—and kept its beam-weapon going as it struggled to dash in again.

Minute by minute the clanging of the bell grew less. Despite her drive the ship was only slowing. She had not stopped. But when the planet's disk ceased to recede and began to grow visibly larger once more—when her savage second charge was evident—Rod saw flickerings as pyramid-ships deserted their formation and fled toward emptiness.

The main body of the fleet did not disperse. It did not flee. But as minute after minute passed, it became apparent that something was wrong. The edges of the pyramid-formation grew fuzzy. The ships did not keep station.

When the *Stellaris* bored into them again the bell clanged and clanged and clanged. At the thickest part of the fleet it rang frantically, one sharp stroke for each outpouring of the push-pull beam at an individual target. But the ships made no concerted move, nor any purposeful individual ones. The *Stellaris* was merely killing again ships that were already dead.

**M**INUTES more and she was through a second time and the first space-battle in all the history of the galaxy was over. One Earth-ship that had taken off from its home planet by pure accident, unarmed and unequipped, had wiped out nine-tenths of a fleet that had never before been opposed. And its remnants were in flight.

The *Stellaris* drove on and on. The unmanned hulks which had been fighting vessels only a little while since fell astern. The clamor of the bell lessened. Presently there were only random disconnected sounds. Later there were none at all.

"Not too nervy," commented Rod. "They saw we had them licked and those that were left headed for home. It fits the way their minds seem to work."

"What will we do now?" asked Kit. "Land on the planet again?"

Rod considered, scowling. "Part of the fleet ran away as soon as they found their broadside was no good."

"Broadside?"

"Massed push-pull beams," said Rod shortly. "They turned the beams of the whole fleet on us. We shouldn't have been able to live through it to get within range with a single ship's weapons. Probably wouldn't, at that, only you felt queer."

"That was the first-aligned beams hitting us, away out of range for a few beams but well in range for the bunch of them! Another second and that blast would have been so strong nothing in creation could have stood it. Certainly we couldn't!" He paused.

"Some of them, though, ran from a fleet action. They're not a very brave race. I'm trying to figure something out. The ships on the ground knew we'd knocked off their sentries. Of course! So we were dangerous."

"So maybe some of them didn't take off with the rest of the fleet. Playing it safe. It would seem to fit in with the way their minds work. So maybe some ships are still skulking on the ground."

"So?" Kit waited.

"If we can spot them they're dead ducks. But if we tried to land they might knock us down practically from ambush. They're probably half shivering in deadly fear and half licking their chops as they wait for us to land. So—"

He looked abruptly at Kit, and then at Joe. Joe grinned.

"I guess we stop off at one of those other planets?"

"That'll be it," said Kit confidently.

Rod's eyes narrowed, even as he released the small hand-tractor which kept the deadly contrivance on the ship's bow in action.

"Ye-e-e-s," he said slowly. "I guess that will be it. We'll see what is to be seen. But I think I'm going to be mighty cagey!"

He swung the *Stellaris* about on her course.

The line of flight of a space-ship is not at all the same thing as—say—the path of a ground-vehicle. When a ground-vehicle, moving south, turns east it travels east and stops moving south. A space-ship doesn't. The space-ship doesn't stop moving south. There's nothing to stop it.

When a course is changed the new line of movement simply modifies the one the ship followed before and that is the result



of all its previous courses. A southward-moving space-ship which heads east actually travels on a line somewhere between south and east.

The exact line depends on the acceleration of the ship, how long it was on the southerly course, and how long it continues on the eastern one. Its direction of motion changes with each of those factors. So that to sight for a planet from space, as the *Stellaris* did, and then head for it, is no way at all to reach it.

Rod probably knew it in theory but he realized it the hard way. The yellow sun's second planet had a proper motion all its own, which Rod did not know. The *Stellaris* had a motion all its own, which was the result of all the courses it had followed during two full days in two different universes. But nevertheless, Rod aimed the ship at the second planet and drove for it.

Hours passed and the *Stellaris* was farther from the planet than when it started. More, it no longer pointed at the planet though the distant stars it aimed at were the same. Rod tried again and the same thing happened. In the end, scowling, he swung a tractor on the elusive world, waited an astonishing four full minutes for the beam to take hold and then grumpily set Joe on watch and went to sleep. It was his second period of rest in more clock-days than he could count up.

He slept heavily for a long, long time. He waked and Kit brought him food. It was strictly vegetable and vaguely unsatisfying. He ate, only half-awake, and went back to sleep again.

This time he dreamed. And oddly, it was not a dream of Earth or of the battle just past or even of Kit, whom he could not allow to absorb him too much in the present state of things. He dreamed of the dead race on the yellow sun's planet—the race which was now only a multitude of crumpled heaps of brightly-colored garments.

**I**N his dream he saw a space-ship rise from the third planet and land upon another. He dreamed of a tiny colony established there before this space-ship made its flight. This ship landed on a hitherto unexplored part of this new planet and the colonists just moving to the new planet found a vague metal object there.

They meddled with it and immediately they died—not only the meddlers, but those in

the grounded space-ship nearby. And then the object melted itself to a mere pool of bubbling metal, which was found by members of the already-established colony much, much later.

The space-ship itself was smashed as if by explosives. And after that there was no more communication between the colony on this other world and the planet from which they had come. The colonists simply lived on, bewildered and helpless.

As a dream it was at once remarkable and suspicious. It was reasonable enough as a rationalization of a hunch. But Rod wondered cagily why his subconscious had pictured no metal pyramid as the object the colonists-to-be had meddled with? Why not a pyramid with sculptured figures on its sides?

It was a very vivid dream. Of course he'd been thinking of other races endangered by the pyramid-ships. Joe had said something about good guys existing to make up for the bad ones. And he'd thought unreasonably often of the yellow sun's second planet. Especially lately. Even when his mind should have been full of battle-plans as the *Stellaris* sped toward a fight.

It could be a hunch, of course. He'd had a hunch before—on the dead planet, when he was making a push-pull beam to wipe out the looters there. He'd felt deadly danger without knowing why he felt it.

He'd worked frantically, racing against time, though he knew of no real reason why he should fear the coming of looters to the city the *Stellaris* had landed in. And that hunch and the hurry it caused had saved him and Joe and a painter then and there and probably the *Stellaris* besides.

The hunch and the dream and the constant thought of the second planet fitted together a little too well. It was plausible that uneasiness should show up as a hunch. It was reasonable enough that an urge to visit a planet should show up in a dream as a concocted explanation of a reason why he should go there. But he didn't believe it.

The real cause of his dream didn't know that the killer-race made its booby-traps in the form of pyramids. The real cause of his dream didn't picture a pyramid on the second planet, though almost certainly one had been there to cause the murder of a race.

Rod got up, thinking coldly. He heard Joe's voice, angry.

"That ring-tailed haystack ain't goin' to

lick us! If we set out to hit some place we're goin' to hit it."

Rod stepped into the control-room. Kit was there, looking anxiously ahead. Joe shook his fist out of a forward vision-port.

"Morning," said Rod, drily. "I must've slept the clock around. What's up?"

Then he saw. The second planet loomed large and very near. It appeared to be merely a featureless fleecy white. That would be clouds. But on closer view the clouds were not wholly solid.

They were in masses which sometimes merely thinned at their junctures, and sometimes separated a little to show a darkness below them, the whole producing a mottled semi-marbled effect. But the *Stellaris* was not approaching the planet. It rotated serenely at a seemingly fixed distance.

"We been tryin' to get down onto that hunka cussedness yonder," explained Joe, indignantly. "But the closer we come the quicker it dodges! We been clean around it a dozen times already an' we can't get a bit closer! What're they doin' down there? Pushin' us off with a pressor?"

Rod grinned. He thought he understood the dream now.

"Hardly! We've got a lateral velocity and we're hung tight to the planet by a tractor beam. So we're in an orbit around it. Naturally we can't get down like that!"

"Says who?" demanded Joe pugnaciously, scowling at the planet.

"Says me," Rod told him. "We'll get down though." He took over what controls there were. "When I was a kid I used to twirl a weight on a string and get it going fast, then let the wind itself up on my finger. Did you?"

"Uh-huh, but what's that got to do with this?" demanded Joe.

"It's the trick," said Rod. "As the string wound up and got shorter, the weight went around faster and faster. Remember? But it didn't go faster in feet per second, just twirls per second. That's us. The closer we get the faster we go around it—and our tractor-beam will stretch. That's all. I'll fix it."

**H**E SWUNG the ship until the fleecy planet was straight abeam. He put on full drive in the direction opposite that of the planet's seeming motion.

"How long do we take to get around?" he asked.

"Less'n an hour," said Joe angrily. "You can tell. There's one place where it looks like a mountain or something sticks up through the clouds."

Rod nodded. That checked. "We'll land there."

He watched. The *Stellaris'* drive produced no visible effect for a long time and it seemed insane to try to descend to a planet's surface by driving at right-angles to the desired descent. But that was the only way it could be done.

Presently the passage of the mottled misty surface seemed slower. At the very farthest edge of the visible hemisphere, a speck of solidity appeared. Rod stepped up the drive again. It made a noticeable increase in the feeling of weight.

Then the mottlings were visibly larger. As the planet seemed to slow, the mottlings continued to increase in size.

"We're coming close, now," said Rod. "We'll be holding off on pressors, presently."

It was true. The sphere beneath slowed to a snail's pace and it was very near indeed. The speck of solidity vanished and reappeared, and vanished and reappeared. Mist sometimes boiled over it, sometimes left it in plain view.

Rod began to juggle tractor and pressor-beams. He adjusted the jet-drive. At long last the planet's surface seemed stationary and he cut off the jet. He began, very carefully, to let the ship down into atmosphere.

"I'm going to make a guess," he said meditatively. "When we get down to that mountain-tip—it's the only one that pierces the clouds—we'll find a big mass of stuff that once was melted metal. And not too far away we'll find a smashed-up space-ship. Not a pyramid-ship, this one, but a ship made back on the planet that's dead now."

Kit looked at him, and her mouth opened. Then the logic of the statement appeared.

"I think I see," she said slowly. "You mean it would have been easier for the people of the dead cities to reach this planet than the snow-covered one because it comes nearer. And the one place where solid ground shows would be the place where a space-ship would land. Also it would be the one place where the pyramid-people would have put something to tell them when it was touched."

Rod grimaced. "I spoke too sensibly," he said. "Now I'll make a prophecy. When we land we'll wait. And presently some survivors of the race of the next planet out will

come to us. And I think they'll be friendly."

Joe blinked. "Ghosts?"

"No. Real people," Rod assured him. "People that happened not to be home when their world was murdered but perfectly real people. You saw what they were like in the televisors."

"How'll they come?" demanded Joe skeptically. "Space-ships?"

"More likely aeroplanes," said Rod, working the ship down with infinite pains. "Maybe ground-vehicles. But they'll come!"

In this, though, he was wrong. He let down the *Stellaris* with the utmost of painstaking care. There was air outside, and winds. There was a vast sea of cloud and streamers of mist that writhed up from it.

Sometimes the mountain-top was hidden by white stuff. Sometimes it was laid bare. But at long last the *Stellaris* settled with a noticeable jolt upon the barren rock of what appeared to be an upward-slanted small plateau rather than a pointed peak.

Rod pointed out a port. There, in plain view from where the ship touched ground, was a shining, mirror-like surface. It had been a liquid once. It was solid metal now. A quarter-mile away there was a shattered carcass which was only a quarter of the *Stellaris'* size but surely had once been a nearly spherical space-ship.

But Rod was mistaken about waiting, about having people of the supposedly dead race come to them.

They didn't have to wait. The people were already there on the mountain-top, waiting for them.

same clear sounds to him.

At such times the sounds made sense. When there was physical contact there was meaning in the musical tones of the small people. At other times they were only sounds—very musical, more or less pleasant, but only sounds.

But of course the same could be said of any unfamiliar Earth language.

Rod had been prepared for it. After all, he'd had a highly useful hunch in a dead city and he'd been obsessed with the thought of coming to this planet, and he'd had a dream which ignored information he possessed.

Had his own subconscious mind dictated that dream, it would surely have pictured a metal pyramid on the cloud-wreathed world as the origin of the pool of metal. But the dream did not picture that at all.

When the other facts were taken into consideration it added up to limited, incomplete information from somewhere, from a source which had some knowledge that Rod did not possess and lacked some data that he did.

Explanation was complete, now. The dream was accurate as far as it went. The little people now in the ship's control-room had been very brave indeed. They'd come out of the mist to meet the *Stellaris* as it landed and they'd made gestures obviously intended as a welcome.

And Rod had gone out to them. He carried a flame-weapon taken from the captured pyramid-ship but he left it in his pocket. He had no uneasiness about the air because the small people breathed it and the air of their home planet was suitable for humans.

So the group of half a dozen rotund figures and Rod—inevitably grim—had met on the top of the one mountain to rise above the planet's clouds. There was not exactly tenseness in the air. Rod felt an anxious, an actually desperate sensation of hope and fear together, communicated to him in the odd fashion of a hunch.

He spoke. His tone was dry. "We're all in the same jam, it seems. And with a community of dislikes we ought to be friends."

Flutelike notes filled his ears. Then a short round figure approached, very hesitantly, and held out two hands. They were not human hands but they were empty. Rod put out his own. The round figure almost apologetically moved closer and very tentatively offered to touch hands with Rod.

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## CHAPTER XI

### *In the Cards*

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**T**HE *Stellaris* settled again through thick and swirling mists. Slowly and cautiously, and slowly and cautiously, she moved down toward the white oblivion the clouds promised and produced.

There were strange people in the control-room of the Earth-ship. The tallest was no more than four and a half feet tall and they were distinctly rotund, all of them. They made clear high-pitched sounds to each other, and now and again one of them put urgent hands upon Rod at the controls and made the

"I'll try anything once," said Rod. "Go ahead!"

The hands touched. The round man's flesh was warm and firm. But instantly the high-pitched sounds were language. Urgent, apprehensive words. It was even reasonable that comprehension should follow physical contact but Rod did not wait for theoretic discussion. He spoke himself and his words were understood.

Minutes later he led the way to the air-lock.

"These people," he said crisply inside the ship, with the small group clustered behind him. "These people are members of a colony from the planet we visited. They know the rest of their race is wiped out. They've every reason to be our friends.

"If you holds hands with them you can talk. We'll work out explanations later. Right now we're going to shift the *Stellaris* down out of sight beneath the clouds. Get talking to them and find out all you can."

AND then he went to the control-room with the round man who had first touched hands with him. He prepared to shift the *Stellaris*. Here, atop the mountain, at least sometimes it could be sighted from space and bathed in a deadly push-pull beam.

The ship rose on her pressor-beams. She moved. But navigation in a world of mist was ticklish. Rod had to feel his way cautiously. More, the small people had come a long way to greet the Earth-ship. It was necessary to ease the unwieldy space-craft through many passes among high and unseen mountains.

There were moments when he was absorbed in the task and the trilling speech of the little folk was a disturbance. And there were many times when warm hands touched him irritatingly—but at each such contact the twitterings became intelligible—and he received useful knowledge about his immediate problem.

When the mountains were cleared there was a long flight of some hundreds of miles over unseen level stuff which might have been either flat land or sea. Rod did not like it. He liked to see what he was doing. But in snatches between the more practical data on course and height he caught fragments of twittering not meant for his ears. And they were reassuring.

When at long last he set the ship down—it was actually the third time he had brought her to ground since her lunatic departure

from Earth—when at long last he landed again he was reasonably satisfied about the small folk. But he was wholly dissatisfied with the picture of the future as they saw it. He was not even very much pleased with the ship's surroundings when he cut off the power.

The *Stellaris* lay in a forest of gigantic trees, with trunks from ten to fifty feet in diameter. There was everywhere a gray twilight. Huge wide-spreading branches at once shut out a view of the clouds and seemed to form a roof which kept out the mist, so that the space beneath them was clear.

Later one of the biological assistants told Kit that the order of things in vegetation was reversed in these trees. Instead of taking moisture from the ground and losing it through the leaves, these trees absorbed water through their foliage and sent it down to their roots.

But under their protection the colony from the third planet had set itself up to survive. There was a tiny power-house, quaintly like the architecture of the dead cities in its details. Three were small houses. And everywhere, some fifty to a hundred feet up on the tree-trunks, there were light-projectors to throw light down on the colony and its inhabitants and their cultivated fields.

On a cloud-covered planet there would not be much ultra-violet and under such a forest there would be none at all. But lights could substitute. The colony could survive and feed itself. But it was very small. There were no more than two hundred individuals remaining of a race that had dotted a planet with cities.

When the humans emerged from the ship they could feel the overwhelming relief from tension the welcoming-party's report had brought. Rod was led at once to the colony's head. And—holding hands absurdly—they plunged into the business before them.

For the rest the establishment of friendship and understanding was the most urgent of needs. Kit took half a dozen of the little round women into the *Stellaris*. She held hands and talked and they readily understood her.

They exclaimed politely over the *Stellaris*, but it was clear that they considered its incompleteness uncivilized. Only after Kit explained the accidental and unpremeditated beginning of the voyage were they quite convinced. Then they expressed engaging sympathy.

**B**UT when they saw the loot taken from the pyramid-ship—the lustrous fabrics, and the delicately prismatic plastic-ware, and the flowers and seeming people on the other art-objects—they were fascinated.

They could not understand how people who made such things could be murderers. Then Kit explained that it was apparently loot from still another murdered race and she fairly felt the burning hatred the small people knew.

When Rod came back to the ship she was full of news.

"Rod, they're adorable!" she told him enthusiastically. "They're civilized! They're charming! I've found out about the telepathy, Rod. They say that telepathy's never quite satisfactory because no two people see things exactly the same way.

"A square or a circle doesn't look quite the same to me as it does to you, Rod. So there's normally a fogginess in anything like thought-transference because you're trying to see through somebody else's eyes."

Rod nodded.

"But words do help to get thoughts into a pattern that can be transmitted," Kit went on breathlessly. "And with contact real communication is possible. When they talk and hold hands they get each other's meanings much more accurately than we do.

"Outside of that they can only pick up emotions, not thoughts. They know how you feel but not what you think. And they knew that their race was dead when they couldn't pick up any feeling of the race's emotions.

"They were able to tell when the looters were on the planet because their emotions were alien and contemptuous. But when they picked up our emotions of horror and sympathy and anger at what we saw they knew we'd come and weren't the murderers!"

"I know," said Rod tiredly. "The whole colony held hands and all of them tried to warn us about the looters but all they could do was make me jumpy. Before the battle they were trying again."

"They could only make us interested in the inner planets. After I went to sleep they were able to make me dream but they can't do more than that without physical contact and it took all of them working together to do so much."

"It's wonderful that they're able to do that much," said Kit.

"Very wonderful," said Rod in some bitterness. "They brought us here with it. But

do you think we can take all of them on the *Stellaris*? Will our air-purifier keep them from suffocating with us if they stay on board indefinitely?"

Kit looked blank. "I don't suppose so. It's kept the air good for us."

"Fifteen people! Add two hundred more. What then?"

"But they're all right here, aren't they?"

"For how long?" demanded Rod. "We had one brief contact with a space-ship just out of Earth. All our other contacts have been here in this solar system. The pyramid-people murdered this race because they made a space-ship and it was only luck that this colony'd been started before they learned of it. We figured that if we stayed here those fiends would think we were survivors and not guess we came from Earth. Now there *are* survivors! So what happens?"

Kit shook her head. He said savagely, "Those rats hunt for us—as a colony. They find these people—a colony. They wipe them out for what we've done! I've been talking to the colony head. There's no evading it. That's in the cards."

## CHAPTER XII

### Boarders

**S**HRILL twitterings down below. The voice of Joe the electrician, just coming in the air-lock.

"Okay, fellas! If you can make anything outa it, you're welcome! Anyhow, it's plenty hot if you can use the power."

His voice died away and the twitterings with it. He was taking a group of the small round men into the engine-room, doubtless to show them the condenser-device from the pyramid-ship the *Stellaris'* crew had looted.

"If we hadn't turned up," said Rod, "those fiends would never have suspected that there were survivors. The colony could have gone on for centuries, building up a new civilization maybe and knowing about space-murderers and working out ways of fighting them when they dared take to space again. But we turned up. We've spoiled that idea!"

He spread out his hands. "Those rats will look for *us*. They'll find *them*. If we go away and leave these people here they'll be murdered like the rest of their race. Because of

us! And we can't allow that!"

"N-naturally," said Kit distressedly. "Of course we can't. But what can we do?"

"That's what's got to be worked out," Rod told her grimly. "We can depend on the pyramid-ships coming back. And with an answer to our last trick, too!"

He felt something close to despair. There are obligations that cannot be evaded. If the *Stellaris* had made the race of murderers suspect the existence of a colony, where there was none, that was warfare. But to cause those murderers to search for a colony which did exist was something else. Human beings can't do that sort of thing and go off untroubled.

Joe came in, beaming. "Those little guys are pretty smart," he said contentedly. "They take that condenser that's a power-picker-up an' chirp at each other an' tell me they think they know somethin' that they can figure out that gizmo from. They say they got a hunch it's even the answer to faster-than-light travel. So they go off, cartin' it precious, to see what they see. Okay?"

Rod nodded. He sat scowling at the mass of unfilled spaces which should have been the *Stellaris'* instrument-board.

"Listen, Joe," he said heavily. "Those pyramid-rats have taken a licking. From us. But they can't leave it at that. They can't stay licked. They've committed so many crimes they can't stop. If any other race gets space travel and they can't wipe that race out the pyramid-people get wiped out. They know it. They can't make friends now. It's too late!"

Joe said amiably, "Those little guys won't make friends, that's sure! Maybe they got squeaky high voices but they know what hate is! They were asking me questions about the cities yonder an' the way I could tell they felt made my hair curl!"

Rod said impatiently, "What do you think the pyramid-ships will come back with? I doubt they're too smart. They made some discoveries and used them for weapons and apparently were satisfied to stop at that. Their ships are no more civilized than a pirate ship in the old days. But they've got to work out some way to handle us. What'll it be?"

Joe sat on the corner of what was intended for a navigator's table, if a navigator should ever acquire star-maps and navigating instruments. He swung one foot.

"What I'd do? Hm—we come out of other-space right in the middle of their fleet an'

knock 'em off by dozens before they can slap a beam on us, an' we're gone, still fightin', before they come to—them that's left. If I had to cook up somethin' it'd be to handle a ship that turned up in my lap."

Rod waited, frowning.

"An' it looks to me," said Joe, "like if I thought somebody was goin' to do that I'd have beams goin' out in all directions as soon as I thought he was thinkin' about it. If there was any way to keep 'em from bumping off my own gang—"

Rod jumped. "Right. I keep thinking in terms of our outfitting. But they've got measuring instruments! They can calibrate their beams! They could mount push-pull generators that would kill up to ten thousand miles but not beyond.

"Then they could space their ships fifteen thousand miles apart and have a fifty-percent overlap and a formation that'd fill up the whole solar system! All such a fleet would need to do would be simply to sweep through a solar system and everything in it would be dead! If we charged a formation like that or tried to turn up in its middle . . ."

JOE nodded. "Uh-huh. We'd get a dose of push-pull beam that'd knock us off in a hurry."

"And what's more—" Rod's forehead cleared. "Since they haven't got other-space force-fields they probably think we can jump from a standing start to light-speed or better. That would seem to explain our jumping through their beam into their laps!"

Joe swung his foot, unperturbed. "Uh-huh." Then he said, "Those little guys are pretty good with tools. How much time you think we got?"

"Not much! The ships that escaped have got to get back to base, wherever that may be. They've got to work out a new trick—which will probably be that one—and mount new projectors and calibrate them and then come back. But it won't take long!"

Joe said amiably, "A focused tractor works from the other-space to this. You think it'd work from this to the other space? An' a pressor, too?"

"Why not?" Then Rod stared. "Are you thinking of a drone? That would be the trick, of course."

"Yeah," said Joe, grinning. "It'd scare the pants off 'em if they saw the ol' *Stellaris* amblin' right up to 'em through all the beams they could pour into her, wipin' 'em out

copious an' not havin' a whisker curled by the worst they could do. They'd figure they were goners sure!" Then he added, "If we got time to fix it."

"That," said Rod sourly, "is the question!"

It was a very urgent question. And there were others. But answers of a sort were forthcoming for most. As for the time before a refurbished pyramid-fleet could be expected back, the small people could promise some telepathic warning.

As they'd known of their race's death by the absence of any emotions to perceive, and of the coming of looters on the planet by their scorn, and of the landing of the *Stellaris* by the much more sympathetic emotions of its occupants at sight of the murdered cities—so they could know of the space-fleet's return.

But they could not get the slightest inkling of any technical improvements in the enemy ships by their psychic gift. They simply couldn't read thoughts—only feelings.

Feverish activity commenced. The small people began to make a double of the *Stellaris*—a double in appearance only. It was a mere shell of thin metal put over a frame that would hold it in shape. Some of their technicians began a feverish duplication of the fighting-device on the *Stellaris*' bow.

The arc-welders from the ship welded that in place and so released tractors that had anchored it. Joe ran cables into the control-room and set up something like adequate indicators—getting the needed instruments from the colony's small store.

Work went on frantically in the *Stellaris*' flotation-bulges too. There was no time to build new sections to the ship but the flotation-bulges now served no purpose.

Heavily insulated inside, with heating-elements provided, they could accommodate a great addition to the hydroponic gardens which kept the ship's air fresh. The small folk, too, had plants which would serve to excellent purpose. They would provide food in vast quantities.

The matter of food for the first time was solved. The colonists had plenty and the colony had necessarily been staffed with technologists needed for its survival. The dietitians discussed matters in great detail with the several humans. They made tests. They painstakingly experimented.

In two days from the *Stellaris*' landing, the diet of its human crew was wholly bearable. There was a close approximation of bread,

and a very near similitude of three or four different vegetables—but the ones from the ship's air-rooms still tasted better.

There was even a pretty good imitation of steak, which the dietitians assured Kit contained all the needed amino-acid chains the human beings required, plus the fats they had begun hungrily to crave. It was not exactly right—not exactly—but it was a great deal better than they'd had.

THE real triumph, however, was in the technical department. The little round men used the same plastic "vacuum-tube" that Rod had salvaged from the planet. They had two others, which were smaller. They used the condenser-device from the pyramid-ship also for power.

The imitation *Stellaris* was an empty shell but for a complex, heavily-built device in its very center. That device did not include a drive, because there were reinforced plates on which the real *Stellaris* could focus tractor and pressor-beams, so that its pseudo-twin could be maneuvered and moved from a distance.

But in place of the drive there were tiny beams focused on devices in the *Stellaris* which performed the functions of cables. The power in those beams would vary to communicate information to the *Stellaris* even in other-space. And the little men dismantled the four televisions and set their scanners in the giant robot they were constructing. The receiving-screens went in the Earth-ship's control-room.

Altogether an incredible lot was done. The Earth-ship was no longer alone. She had a fighting-ship for companion, unmanned, to be sure, but which had at least five times the power-supply of the parent vessel and her fighting-beam was deadly.

With many hands to work on it, all inspired alike by hatred and equipped with skill, that fighting-beam was a monstrous engine for destruction.

The push-pull beams were ingeniously designed to scan all space with fifty times the rapidity of the first device and to linger briefly on any found target.

They had the power of a generator designed to supply a metropolis, plus two smaller generators intended to furnish a colony not only with ordinary power but the means of combatting a strange environment, plus a power-unit from an enemy space-ship itself. The beam of this single ship

should have nearly the range of a fleet-broad-cast of the enemy.

But it was, of course, a robot.

Two days passed—three—four. Then there were twitterings in all the compartments of the *Stellaris* as the round little colonists crowded into it. They carried small possessions.

They had already moved stores and highly useful supplies into the ship's unfinished storage-rooms. They were, to all intents and purposes, abandoning their colony, because their entire solar system would be blasted when the pyramid-fleet returned. And the *Stellaris* seemed crowded.

It was necessary. Twenty of the little folk had been on watch since the beginning. They sat in a circle, holding hands in a quaint absorption.

They were aware, of course, of the emotions of their fellows and of the humans around them. But they carefully ignored those sensations.

They must have felt a curious loneliness as they listened or watched—however the process could be described by which they waited for the sensations of alien presences which would tell of the return of the enemy fleet.

It was coming. It was coming fast. The air-lock was sealed. The *Stellaris* thrust upward on those invisible stilts which were pressor-beams and Rod drew the pseudo-ship after him as cloud-banks swirled around the Earth-ship.

He had controls for this ship, now. He swung it past the *Stellaris* as it wallowed in the impenetrable mist.

He sent the drone out of atmosphere into space.

Warm hands clasped him urgently. Twitterings.

They had meaning.

*"It seems that they come faster than light. They are very triumphant. Their emotions suggest that they will slow to visibility only after they enter this system and that they will flash through it, destroying everything in an instant without any possibility of reply."*

"That," said Rod with some confidence, "is what they think!"

An hour later he no longer had confidence. An hour later the *Stellaris* was beaten, its drone crippled. It fled madly through other-space while the pyramid-ships systematically wrought destruction upon all the planets of the yellow sun. If any life had remained it no longer did so.

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## CHAPTER XIII

### *Defeat*

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AT FIRST, it did seem that the battle would go Rod's way. The drone-ship went up into sunlit space from the cloudy covering of the second planet. Hidden in the mist, Rod had to interpret the look of things from the television-screen in the control-room.

In a very real sense the vision-screens were superior to eyesight. There was an adjustment of which the humans had not known by which the images could be enlarged. Any part of the transmitted scene could be chosen and examined under high magnification.

Small round men watched those screens, ready to rip off for later study the lasting image should an informative event occur. The images were in full color and of astoundingly fine definition. It was hard to believe that they were transmitted from space by tiny focused tractor and pressor-beams.

The first scenes were wholly peaceful. There was the yellow sun and there were the four planets in plain view. Beyond there were the cold lights of a million million suns of every color and degree of brightness.

As the pseudo-ship rose higher and higher from the cloud-banked globe Rod saw for the first time the actual picturesqueness of inter-planetary space. Always, before, when he saw the stars beyond atmosphere, he had had immediate pressing problems of navigation or of survival.

But as a color-picture on a vision-screen its startling beauty and variety struck home. Which proved that Rod was wholly human in failing to notice beauty until a frame was put around it.

Of the enemy ships there was as yet no sign. The drone ship was two thousand miles out. Three. Five. Then warm hands touched Rod and musical notes in his ears formed themselves into words.

The enemy fleet was very close. The crews of its many ships were triumphant by anticipation.

Rod shot the *Stellaris* up to emptiness. For seconds, there seemed to be two Earth-ships in the void. They were identical to all outward appearance and to all seeming they



were alone in space.

Suddenly, though, the real *Stellaris* winked out of being. It had gone into the other-space and its only link with the cosmos of the yellow sun was the tenuous complex grid of focused tractor and pressor-beams which linked the drone-ship to the *Stellaris*, the *Stellaris* in turn to two planets of this solar system and to an unthinkably remote unknown object, deep in the heart of the dark universe.

These three anchorages gave the Earth-ship the leverage she needed to maneuver the drone. The television eyes in the drone gave what information was needed to maneuver the drone. The television eyes in the drone gave what information was needed for maneuvers and, of course, the hidden inner weapon began its ceaseless search for targets the instant the *Stellaris* vanished.

The tranquility of airless space remained. The drone-ship—a mere shell—moved like a pawn from another universe, seemed to come to a decision. It swung about in emptiness and headed steadily for the planet of the dead cities.

Its movement was smooth and even, which was in itself a proof that it was not a ship moving on normal drive. A ship under power would either be accelerating or slowing, certainly not coasting at the beginning of an interplanetary voyage.

The dummy space-craft moved on and on. And then something appeared magically, something else appeared magically, suddenly all of space seemed aglitter with shining metal shapes appearing eerily from nowhere.

The yellow sunlight gleamed on their sides, and the vision-screens showed them by myriads in all directions, from a colossal pyramid almost within arm's reach of the drone—it filled all of one television screen—to others and others dwindling through all sizes to the uncertainties of sixth-magnitude brightness.

Within a space of seconds the whole system of the yellow sun was filled with ships. There was no counting them. There were thousands upon thousands upon thousands of them. The pyramid-race had massed such a fleet as Rod had not conceived of to crush the one small vessel which challenged its might and its privilege of assassination.

But the *Stellaris* did represent in fact as great a danger to the murder-race as the pyramid-ships to it. If left undestroyed the *Stellaris* could multiply.

IN THE dark universe Rod stared in amazement at the spectacle. He touched a single stud, and the drone-ship's weapon lashed out invisibly. But he was almost dazed by the instantaneous appearance of this monstrous fleet.

"They slowed from faster-than-light drive," he said blankly. "That must be it! They traveled in formation, faster than light! And they all slowed together and—here they are! They took my trick of jumping into their laps and twisted it to make their lap jump into me!"

The statement was exact. In the previous fleet-encounter, the *Stellaris* had leaped from extreme range instantly into the midst of the pyramid-ships. There it had done vast damage. Now the enemy fleet had appeared as if leaping from incredible distances, in a formation which could not but surround any space-ship near this sun, with every pyramid-vessel spouting deadly radiation from each of its five flat sides.

Against such a maneuver there could be no defense. It was perfectly designed to wipe out all life in a volume of space exceeding the gravitational field of a sun. Every world and every comet, every asteroid and even every stray grain of meteoric matter—all would be sterilized instantly before a warning-device could operate or a single relay kick over. It was deadliness itself.

And it worked perfectly. The drone-ship was almost crashed by a monster pyramid as it slowed to visibility and ravening beams of push-pull killer-stuff raged through it. That pyramid flung away, keeping formation at many miles a second. Other pyramid-ships flashed past, each one pouring its deadly beams upon the robot vessel. The pseudo-*Stellaris* seemed to falter. Nothing living could survive what it had taken. Nothing could live within it. Nothing!

But the drone-ship fought on. It spun crazily and its beam licked out and licked out and licked out. It bit savagely into the enemy armada as it poured by, every ship flooding the defiant drone with ever-fresh murderousness. Pyramid-ships by dozens and by hundreds hurtled by and each one blasted it afresh.

And each one died. Because whether dead or not, a complicated and inordinately powerful apparatus functioned in the robot, too. Three separate generators—plus a power-supply unit of the enemy's own make—thrust energy eagerly into a push-pull generator

which threw a tight aimed beam at every target its detectors disclosed.

That beam far outranged the enemy weapons, because they were practising saturation-beaming and that precluded concentration of their deadlines. So the little robot killed and killed and killed.

But its own lifelessness was certain. Its far-reading murderousness became known but the enemy ships beyond its range exulted in the destruction of the one small crew which was a danger to their race.

Those within range of its weapon, however, were past triumph. They were past everything. They were coffins hurtling onward senselessly.

In other-space, in the *Stellaris'* control-room, warm hands touched Rod. Twitterings became speech. "*More! Kill more of them!*"

Rod said grimly and with narrowed eyes, "I share your ambition. But this is bigger than I expected. They're regrouping now and they must know by this time that the beam that's killing them is working by itself. Every one in range is knocked off and the others are ducking."

Kit said, staring from one to another of the vision-screens, "A terrible lot of them must have been hit, Rod. Look at the way they—"

"There's a terrible lot left," he said bitterly. "We've already knocked off more than were in the entire other fleet, and they know they've been hurt. But look how many are left! I'm worried!"

**H**E SENT the drone belligerently at the ships which now drew back from it. But in the space about the yellow sun a curiously dramatic picture formed. The fleet which had already made sure that no life remained on four worlds and the space about them was halting in its plunge.

Scurrying motions took place. Ships whose previous course would have taken them closer to the drone-ship now frantically scurried out of her way but not all of them succeeded.

Yet despite Rod's furious working of controls in other-space there presently developed a regrouping of the untold thousands of angular enemies. The pyramid-ships formed a titanic hollow sphere—and the drone-ship was in its very center.

The drone-ship plunged and spun and plunged again. It succeeded only in violent jerkings and the hollow sphere remained—re-

mained beyond the farthest limit of the robot's range.

In other-space Rod scowled. "They've got pressors on it," he said savagely. "All the whole fleet. Massed pressors—as they massed their killer-beam before. They're holding it still and away from all of them. I haven't got power enough to push it against all that! Looks bad!"

He kept the drone-ship trying frantically to break free but he watched the vision-screens. Time passed. Twitterings sounded behind him, warm hands touched him. The shrill sounds became intelligible.

"*They will try to tow it somewhere. Perhaps to their home planet.*"

"That," said Rod, "I would like to see! But I don't think they will. They build gadgets in their ships to destroy their star-maps when a ship goes dead. They might suspect us of something even more drastic. And if we'd thought of it we would have! I don't know what they'll try but things could look a lot better than they do."

Time passed. Any action among the ships of the hollow globe, of course, was invisible because of the distance. Rod waited grimly, keeping the robot still plunging as if unreasoning mechanism only were at work. But there was something still to be learned.

The pyramid-folk, probably for the first time in their history, had met intelligent and deadly opposition to their career of murder. The opposition had been costly. But they had learned from it. Much too well and much too much! They'd englobed and now held helpless a much more deadly fighting-machine than the *Stellaris* had been only a few days since.

Rod drew in his breath sharply. A little knot of angular ships sped out from the massed armada. It went swiftly toward the helplessly plunging little ship in the midst of all its enemies.

Warm hands. More twitterings.

"*More of them die!*"

"Hardly," said Rod angrily. "They learn too quickly! They know nothing can be alive on our ship, though still it fights. So they've set up robot-controls on some of their ships and—we'll see what they do.

"They want to look at the dead crew they think is inside, so they can be sure to massacre the race that bred it. They'd also like to have that fighting-beam, which is better than theirs. And I don't want them to have it!"

ALREADY he had multiplied the dead-lines of the alien race by forcing them to devise this new saturation-beaming of a whole solar system. But if each of their ships, in addition, acquired a fighting-beam as deadly as the robot's that would be more serious still.

The moving remotely-controlled pyramid-ships took position on every side of the dummy craft. Its self-directing weapon flooded them with lethal push-pull radiation. It did not affect them. They arranged themselves in a geometric pattern about it. They swayed a little in their respective positions.

Rod, watching through the television eyes, said softly, "Ah-h-h! They've got pressors fanning out! They push against each other but mostly against our double. Now they'll move and take her where they please. But the fleet'll have to cut off its beams!"

He released the directional controls on the locked beams, so the little dummy ship could be moved where the enemy wished. It moved. Its robot escort set out for the nearest planet, which was the world of dead cities.

"They'll ground it," said Rod, "and hold it against the ground and hammer it with another robot ship until they crack it and knock out its beam. Then they'll look it over. *No!*"

Another ship came streaking out of the spherical formation. It had taken longer, perhaps, to fit out with more accurate remote control. It swept in a great curve, matched speed and course with the small convoy, and went along with them for seconds. The dummy Earth-ship seemed to struggle mechanically.

Then there was a sudden flash of light. A thin, concentrated beam of pure flame darted across emptiness. It lanced through the hull of the *Stellaris'* substitute and on beyond for miles. The flame flashed again. Another puncture. A third.

In other-space, a television-screen went dead. There was a sudden crashing noise. A locked beam going from one universe to another went crazy as the object on which it was focused ceased to exist save as blue-white vapor. The robot fighting-ship, helpless now, was being systematically riddled with holes. The process would keep up until its weapon went off and examination by living things became possible.

"We're licked," said Rod coldly. "They're smarter than I thought. They've got us beaten."

He threw over one switch after another. The *Stellaris* surged forward in the dark space where stars were not.

"Rod," asked Kit anxiously. "You mean we can't do anything but run away?"

"Nothing else," he told her. "We simply can't handle that fleet. We can play heck with it—we have—but it's just too big for us. So we depart for new pastures."

Agitated twitterings came from all about him. There was one of the little folk touching Kit for the ability to understand what Rod said. He repeated the confession of defeat. The others made grief-stricken sounds.

"We're still safe ourselves," said Rod over his shoulder. "We're safer probably, than anybody else in the galaxy. And I'm not leaving our dummy for them to paw over. We've just got to start all over again in some new fashion. The only question is, what the heck can that other fashion be?"

He cut off the robot's weapon and watched the television-screens. Suddenly, all the screens went black. There were flute-like wailings from the little folk.

"Tell 'em, Kit," said Rod. "Remember we made our force-fields take in a half-mile sphere of air outside the ship when we wanted to go over that other pyramid? And remember how I sprang the booby-trap before that by tying a string to my coat and pulling it into this space with a focused tractor? And how I sent you a note from the planet when you were in this space?"

"I remember," admitted Kit. "But I don't see—"

"A focused tractor can pull something out of normal space to this, if there's a force-field big enough to hold it. So I pulled our dummy-ship into the dark universe."

There was a resounding crash against the *Stellaris'* hull.

"Here it is," said Rod. "Now we'll get to blazes away from here and figure out what next."

## CHAPTER XIV

### *New Tactics*

FOR hour after hour the *Stellaris* plunged blindly through the utter blackness of other-space with its battered, shattered robot-twin in tow. Rod pulled the ship away from

the system of the yellow sun by the tractor long ago fixed on an unseen object in darkness' deepest heart.

He could have used the jet-drive but there would have been a trail of vapor—tenuous enough, but possibly followable—when the ejected molecules of gas fell back to normality beyond the ship's force-fields. Even then the *Stellaris* would be unreachable but there was no point in giving the enemy any clues at all to the nature of its security.

As time went on and acceleration continued the ship reached the speed of light and multiples of it. Inertia had quite other values here than in the inhabited universe. But whatever they pulled toward was solid and Rod checked its distance by sending pressors to strike it, estimating their time of travel to the strange object.

The small round folk talked interminably among themselves. Joe the electrician, passing by an especially intent conclave, was halted and hands laid upon him. After seconds of listening he sat down absorbedly.

Half an hour later Rod was down in the engine-room working with tractors and pressors that had no wired connections to the control-room. Joe came in search of him.

"Hey!" said Joe. "Those little guys, they got an idea about the way the pyramid-ships go faster than light!"

"Yes?"

"They got it figured out mathematical," said Joe, "that there could be a kinda stuff that ain't natural. That hadn't oughta exist but could get made—or maybe could make itself in a star or something. It wouldn't—uh—react to our magnetism an' it wouldn't be pulled by gravity or anything like that."

"It ought to fall into other-space," objected Rod.

"Only," Joe explained, "it could be alloyed with natural stuff when it got made. And if they had that kinda stuff a little of it would mix with a lot of other stuff and y'could make a ship of it. And that phoney stuff, it would absorb gravity an' magnetism an' so on an' make it damp itself out.

"That's why it wouldn't be pulled by it. But the energy'd have to go somewhere so it'd show up as motion. That's what they say and they say the figures prove it," he added hastily. "It'd be like soaking up heat an' getting electricity. Y'see?"

"Partly," said Rod. Something clicked in a pressor-coil. He looked at the distance-adjustment on the pressor-beam mount. He

compared it with a similar guide on a tractor mounting. He began, very delicately, to vary the two together so that neither was subjected to excessive strain.

"So all they'd have to do would be to line up the motion an' they'd have a whale of a drive!" said Joe. "Actually, these guys say that if you got the stuff movin' fast enough it'd start movin' faster on its own account. They say those pyramid-ships could have that stuff in 'em, in all the metal an' such.

"So that all they have to do is pile on their drive-jets until they're goin' fast enough an' they pop into all kinds a speed. It's like runnin' fast enough to catch a train. Once you got hold a it, you ain't runnin', you're ridin'.

"Only the train they catch is runnin' all ways at once. Whichever way they want to go, when they're goin' fast enough all of a sudden they're ridin' 'm an' how! Then all they got to do is slow down when they want to get off."

Rod straightened up and stared. Then he bent over again.

"There's more to it. It has to neutralize increase in mass with velocity and a few little things like that," he observed, "But it does make a certain amount of sense."

"Yeah? But—"

"Ask 'em to figure out two other things," said Rod. "One is how those rats broadcast power, if smashing the generator will cut it off and how fast the cut-off will spread. And the other—I'm asking them to dig into it because I gave them the theory and they've time to work it out and it'll need time and sound thinking—the other is how to make force-fields that will drop matter from this space into ours.

"We can take stuff from our space and drop it into this and hold it here. When we cut out fields it drops back. Now I'm going to want to reverse that process and I think I could do it in time but I'm going quietly mad with stuff that doesn't need that much brains and is even more urgent."

HE went back to his pressor and tractor-beams, while Joe returned to the conference of the small people with a puzzled frown on his face.

The ship was crowded but the colonists were civilized and likeable. They crowded themselves to leave room so the humans wouldn't feel crowded. Their women zestfully took over some of the looted fabrics and presently presented Kit with a costume

faithfully copying the cut and fit of the one she wore but breathtaking—in part because of their use of some of the art-objects of unknown origin. The other four girls instantly begged to be similarly attired.

The men conferred and politely asked leave to use an empty store-room for a laboratory. There they conferred endlessly and one of them made computations on an extraordinarily simple machine from the colony and then worked painstakingly with Joe to transfer the equations from his notation to human mathematical terminology.

Rod juggled his beams and juggled them and adjusted them ever more delicately. In the end the *Stellaris* made what might be called a landing on something large and solid in the depths of other-space. Lights thrown out the ports disclosed a rough, seemingly curdled surface of a dark and apparently metallic substance.

Its size was unguessable but it was huge. It had, apparently, no gravitational attraction for the ship—or the drone—and it was plainly not a type of matter normally found in the universe of stars.

When Rod had made tests, he called a conference of all on board. He put his hands on the colony leader so that all could understand him.

"I want to make a report," he told them grimly. "We were licked in our last encounter with the pyramid-ships. But we're vastly better off than we were. Putting extra vegetation in the flotation-bulges has kept our air pure. We've plenty of power and plenty of food. I consider that we can live indefinitely in this ship while we hunt for a planet we can live on.

"We can possibly establish a colony the pyramid-folk will never find. Certainly we can now build more ships—given materials—which can elude if not defeat those fiends. I don't think it likely that we can ever find our way back to Earth."

A twittering interrupted him. A round little man spoke. Rod understood but Joe—also touching one of the little folk—translated truculently.

"He says he's been askin' all of us all we knew about the stars we see from Earth. He says he ain't sure, but he thinks there's a chance he can pilot us back to Earth."

There were fifteen humans on the ship. Twelve of them—Rod and Kit and Joe were silent—made a lot of noise. When it ended, Rod went on doggedly. "But back on Earth

they didn't believe in danger from the pyramid-people. Whether they'll believe us now or not, I don't know. Certainly it'll take time for them to get ready to fight—if they do.

"But we're ready to fight now. We just got licked, and badly, but we did so much damage that there's a chance the pyramid-people leaders will decide to end their danger immediately by wiping out all races that even promise to achieve civilization. That's what I'm afraid of. If we go on fighting it's going to be bad but—"

He stopped, uncertain what to say next. Joe stood up.

"Anybody that argues," he said belligerently, "is goin' to get his head knocked off. I seen the dead bodies on that planet."

There was silence. Presently Rod said, "Then I suppose we'll get to work. We're going to make a new weapon and then we're going to find out where those pyramid-people have their home planet. Then we're going to smash it and them. And we'll all probably get gray hair in the process."

There was no discussion. Later the colony leader of the little people came to Rod and touched him and asked earnestly, "*Why did you discuss? Are you not the leader? Why did you explain and why did your friend threaten?*"

"That," said Rod drily, "is what we call democracy."

## CHAPTER XV

### *The Rat Trap*

**T**HERE was a dark universe unguessable hundreds of millions of light-years in extent. There was a wandering thing in it, a small thing by comparison with the heavenly bodies of star-studded space. In the Earth's solar system it would have been an asteroid, perhaps.

It was barely eight miles through. Its mass could not be measured because it was not a substance which normally existed in normal space. Perhaps it could be created there. Perhaps it was. Possibly it was some unimaginable end-product which remained when the neutronium core of a dwarf star decayed and ceased to be matter that the other universe could retain.

Gravity did not affect it. Magnetism did not draw it. It had no electric conductivity nor did it change the dielectric constant of emptiness. But it was matter of a sort and it could be alloyed with metal.

Rod verified that fact with samples taken in through the air-lock while tractors held the air from flowing out. He gave it to the small folk, saying that it was probably the substance they had deduced from theory could exist.

Their theory suggested other tests, which they made. They went feverishly to work to make alloys. They tore apart the tattered robot-ship with beams which were stronger than the metal they required.

When the alloy was not too high in metal from normal space they found that it was self-welding. Two bits of it, pressed together, united solidly with the strength of a weld.

The small men joyously improvised a process which turned out that alloy as a foil—and the painters on the ship worked at their trade for the first time since leaving Earth. They coated one side of the foil with paint so that it could be stored in rolls without welding itself back to solidity.

Stored it was—placed in storage where no thief or race of thieves imaginable could come upon it. It was piled on the shattered remnant of the drone-ship's plating, anchored to the dark-space object by a tractor with a field of its own to retain it and a generator from the colony to keep it in being.

There were two other generators available. They had been on the drone. There was also the pyramid-ship's power device. The small men had taken that apart and found a surface-treatment of the metal, which to them explained everything. They essayed to give the theory to Rod but he was impatient.

"You say it's a matter of a spherical field practically the diameter of the galaxy, with constants calling for the assumption that space is elastic and can be compressed. All right. It warps so it must be elastic. If it can be compressed the doppler effect on island-universe spectra simply proves distance and not retreat but let it go.

"That's all right—but when you talk about the selective flow of power in a force-field to surface-treated plates because of molecular changes created by the treatment—" Rod shrugged.

"I'll want to know it sometime. The main thing is that the whole field will go

off instantly the generator's smashed. I'm not going to try to understand right now. I'm already trying to get some of your math and my head is creaking with the load."

He was trying to check the calculations on a device the colonists were building in their store-room lab. It would, they assured him, create a force-field large enough to shift the entire asteroid into normal space.

The mathematical statements had been translated by Joe and he had—as an electrician working on modern equipment—a mathematical training which once would have implied a master of arts degree. But this math was beyond him and he translated it blindly. Rod was having trouble with it.

In the end he accepted what was not wholly clear because what *was* clear was so evidently right. He wanted to get at the *Stellaris'* force-field generators again. He expanded them to their absolute maximum size. At the new adjustment, the ship would carry a four-mile sphere of normal space into the dark universe when the field went on.

Then he went back to normal space with the ship. She had then been in the dark universe for a long long time and humans and small people alike crowded to the ports to look at the stars. It was strange to see the hunger of both races to look at far-distant suns which now so peculiarly meant home to them.

**H**ED told Kit his immediate plans and she was ready with half a dozen of the little folk, all solemnly holding hands. The *Stellaris* floated at random amid the stars. Twitterings.

"They say, Rod," reported Kit shakily, "that there aren't any pyramid-people around. Space is empty around here. It's nice, isn't it?"

"Pleasant but not what we need," said Rod. "We'll try again."

The jet-drive went on and the ship went into dark space and came out again light-years away. The little folk solemnly strained for a sense of the emotions of the murderers. Nothing. A second dive and a leap of light-years and a third listening search. A fourth—

Excited twitterings. Hands touched Rod. "*There are many of the murder-race!* Many!"

"Which way?" demanded Rod. "Can you tell? Do they know we're here?"

More flute-like noises.

"*They are bored. They know nothing.*

*They are—they are yonder."*

A small unhuman hand gestured. Little folk watched avidly as Rod sent a tractor-beam with infinitesimal power groping for the space-ships the small people perceived.

"Got the line," he reported. "Tell me if they're warned."

He swung the *Stellaris*. Jet-drive. A dive and instant emergence from blackness. Nothing. The switches crashed and crashed again. The enemy ships were invisible. Their presence had been detected by the psychic sense of the small people and verified by tractor.

"*Very near,*" said the high-pitched notes. "*Very near! Very, very near. They are frightened! Quick!*"

Rod sent the ship ahead in a desperate leap and the field closed in. The fully-expanded field was like a gigantic net which closed about the Earth-ship.

There was a shrill uproar. The little folk clamored, "*They are frightened! They are helpless! They do not know what has happened!*"

Rod grimly and squeamishly changed the controls on the *Stellaris'* bow-weapon.

"I never could kill a rat in a trap," he said savagely. "Here! *You do it!*"

He put the warm, non-human hand of the leader of the little round colonists upon a switch.

"Throw it—and they'll die."

There was a tumult of shrill voices. The *Stellaris* had winked out of other-space and instantly vanished into it again. But with her in her vanishing had gone the contents of a four-mile sphere of emptiness. As once she had carried air to the dark universe, now she carried—nothing, on the first attempts.

But this time the force-field had enclosed a pyramid-ship inside it with the *Stellaris*. Once before such a vessel had been dragged into the illimitable dark but the crew of that one had been dead. The crew of this was yet alive.

The little folk shriled at one another in a terrible joy. Their leader trembled with his satisfaction as he savagely threw the switch which sent a beam of utter deadliness into the captive enemy.

It was a trivial payment for the millions upon millions of their fellows but the small people were filled with impassioned joy. They felt—they *felt!*—the murderers of their race blasted out of life.

"The answer," said Rod, seeing Kit's

expression, "is that their power-supply only works in normal space. We ought to know that. So when I snatched them out of the natural universe into this one their power went, their weapons were useless and I think that even the gadget that destroys their star-maps failed to work. At least, that's what I'm after!"

He went to the air-lock, in which were mounted tractor and pressor-beams and a powerful mounted light. With tractors the enemy ship was brought alongside the *Stellaris*. The two air-locks were lined up.

And—this was the ticklish part—while tractors again kept air from escaping Rod and a welder cut through into the pyramid-ship and went into the revolting reek which was its atmosphere.

**W**ITH hand-flashes Rod and those who would help him made their way to where only molten metal and charred paper had remained on the other ship they'd searched. But here—here were shining unfamiliar instruments and infinitely ingenious star-maps and all that could be needed to navigate a pyramid-ship the length and breadth of the galaxy.

Rod had Joe and two others load themselves down. He himself carried precious maps. They returned to the *Stellaris*. A dozen of the small men followed back to the ship from the blasted enemy. But it was significant that not one of the round men carried a single object as a trophy. Their hatred of the killers of their race was too great to let them look at even a memento without rage.

The *Stellaris* headed back through dark-space for the asteroid of dark-space matter. Rod and the colony mathematicians pored over the maps and astrogation instruments. But they knew the principles by which such things must work and the secrets came easily.

By the time they were near the asteroid the matter was settled. Rod returned to normal space and checked his observations. The colony power-technician by then had worked out a field-flow instrument to detect the power-field of the enemy and to locate its center. His observation checked with the star-maps. Everything checked.

The ship was filled with fluting sounds. The round small colonists were strangely moved. They knew that their dead cities, their dead world, their dead race would soon be avenged. But Rod, touching hands for technical reasons, heard distressed discus-

sions in the back-ground.

The small people had carved vengeance with a fierceness close to insanity, as long as they had little hope of it. But now they had savored it. They had known fully the helplessness, screaming panic of the crew which had had to be killed.

It could not be spared.

Descriptions of either of the two races in the *Stellaris* could not be allowed to go back to the leaders of the pyramid-folk. So the pyramid-ship's crew had to die. But a discussion went on in the Earth-ship with mounting distress.

To destroy a race because it had destroyed one's own might be just and proper—but it made one a murderer too.

And the small people were an inherently gentle folk.

The preparations for moving the dark asteroid to normal space were almost complete when something like a deputation of the colonists came to Rod. The round men were very unhappy, but very much in earnest. Rod touched hands and the shrill sounds about him were somehow very solemn.

"We ask," said the leader unhappily, "that we be taken to a near planet we find on the alien's star-maps. As we read the maps, we should be able to live there. We owe you our lives and any hope our race can have of surviving through us and our children.

"If you ask it, we will remain and help you even to the destruction of the murderers of our kin. But unless you ask we prefer to try to build up a new civilization without protection. We have tasted revenge—and we do not like it."

Rod regarded them steadily. "I don't like killing, either," he said grimly. "I weakened just now. I gave the task to one of you. But I am wondering now if a fleet may not be going through one solar system after another, wiping out the life to be found there.

"I am wondering if such a fleet has reached my home planet yet. I am wondering if the fifteen of us humans on this ship are the only human beings still alive—as you are the only living members of your race. I don't want to leave my race in danger for one instant if it's living.

"And if it's dead," he added harshly, "I want it to be avenged before I find it out! I don't want to keep on living while I hate creatures I have spared. But I'll take you to the planet you've chosen. We need some fresh observations anyhow."

EVERYTHING was quite ready when the *Stellaris* went a bare thousand miles from the strange thing it had made of an asteroid, and returned to normal space. Then, with the jet-drive to set its course and establish a velocity, it dived back to darkness to increase that velocity, and came out yet again into the space where suns flamed grandly, surrounded by their families of planets. They were near their destination.

This also was a sol-type sun and it had seven planets. The nearest was red-hot from its proximity to its sun. The second was an arid waste, the third a small and pock-marked cinder. But the fourth was green, with great oceans and clouds floating above its continents and ice-caps at its poles.

"There is a race here," said apologetic twitterings in Rod's ear. "It is still barbarous, knowing metals but using no power, according to the markings we deciphered on the star-map. It will be long before it should cause the pyramid-people concern. Perhaps we may help and guide the people."

Rod said nothing. He made a planetary approach with something approaching professional skill. In hardly more than minutes the *Stellaris* settled down into atmosphere.

"Rod!" cried Kit. "A city!"

She pointed and Rod swung the ship—so unwieldy in air—into a near approach. It reached the city. It hovered over the city. It was a city, past question. Its ways were paved with quarried stone, its buildings were of massive, cyclopean architecture and it was barbarously magnificent.

But it was definitely barbarous. The great buildings were palaces and temples. The people lived in small structures, most of which plainly had gardens attached to them. There were cultivated fields and pasturelands outside it. There were crude wooden ships tied to the wharves where a river wandered through it.

As the *Stellaris* descended Rod saw half-furled sails. Sails had not been used on Earth except for sport in two hundred years. But he saw no movement.

There was no movement.

The *Stellaris* touched ground. Very grim



indeed, Rod led the way to the airlock. He opened it.

There was a smell in the air. It was the smell of death.

"These people were hardly more than savages," said Rod very quietly, "and they were alive no more than two or three days ago. They haven't even motors! By what we can see they must have lighted their homes with flames, burning the fat of animals, or petroleum.

"They had no fliers, no ground-vehicles except—" he pointed—"that was a vehicle, with an animal pulling it. And these people were killed because some day they might have made a space-ship. The pyramid-folk are frightened. *We've* frightened them.

"They're wiping out all intelligent life that can challenge them even a thousand years from now! If you want to spare yourselves the grief of killing these fiends, go ahead! Get out! Quickly! *I've* got work to do!"

But none of the small people moved to land.

Their leader touched hands with Rod. "*We have decided again,*" his shrill notes said. "*We fight. Not to avenge our dead but to protect those who will never know that we lived. Please! Make haste!*"

The *Stellaris* rocketed skyward and went into blackness, then sped madly to the dark asteroid with her jet-drive and tractors together striving for the utmost speed.

In an hour the force-fields were shrunk so that only the *Stellaris* was included in them. But before that time and under their shielding, the foil-rolls were unrolled. As they touched the dark mass they were welded inseparably to its surface. The other devices needed also were welded fast and the *Stellaris* anchored herself solidly with tractors, and a pressor irrevocably thrust home the master-switch.

**I**NSTANTLY from the ports of the ship—from which glaring lights had shone—there was only the blackness of empty space. The asteroid had vanished. But the *Stellaris* remained anchored to it and the *Stellaris* stayed in dark-space. The ship was with its creation but in dimensions parallel to those of the universe of stars. There was reason.

There were three vision-plates in the ship's control-room, which reported from the asteroid as they had reported from the drone. Starlight shone on the metal of the ungainly

object's surface for the first time since time began.

The report the vision-eyes sent to the dark universe was beyond all expectation and beyond the experience of any save members of the race which made shining ships and used them for unwarned murder. It was terrifying. And it was sublime.

The asteroid reached normal space with a velocity which was inherent—and which was above the critical speed of the alloy-plates now welded to it. Those plates bit hard into the substance of the new universe. They were of the stuff which sent pyramids at deadly multiples of the speed of light.

Other-space matter and normal-space matter, alloyed together, were an unholy compound which consumed the energy of gravitation and of magnetism and of the energy which is electrostatic stress. Perhaps it even consumed the energy of light. And all of that energy it transformed into motion, having a velocity in miles-per-second to begin with.

It sped at a mounting speed which turned all visible starlight to violet, then turned all heat-rays to blue. And still its rate of progress grew. It sped faster until light itself had no meaning and radio-frequency radiations were light and then even they were nothing.

It hurtled onward and the television-screens saw all the universe in that unimaginable glow which is the slow pulsation of the hearts of suns, taking hours to the beat, but now raised in frequency to a strange and eerie glow. And still the speed increased.

Rod worked controls, his eyes shining like coals. There would be but one chance to use this weapon, this bolt of other-matter from another space, traveling at a rate beside which light-speed was imperceptible. The accuracy of the shot must be absolute. There must be no deviation of the thousandth of a hair. And the time was very, very short.

Actually, the thing happened in seconds.

The sun the aliens' star-maps pictured lay ahead. It was a giant sun, so huge and fierce that the aliens' inhabited planet lay two-hundred-million miles away. It was toward that sun that the other-space projectile sped. It was miles in diameter, but it could be controlled.

It moved at five thousand times the speed of light but Rod had precious moments in which to observe its course and aim it, seconds in which to adjust the aim, fractions of seconds in which to make sure.

Then he cut loose the anchoring tractors and the *Stellaris* floated on while the hurtling thing went unguided.

The Earth-ship returned to normal space far beyond the solar system of the pyramid-makers. And the thing was already finished. But the light had not yet reached this spot.

Those on the Earth-ship had time to line the ports, staring, and see the giant sun and even to glimpse the shining specks which were its worlds before the spectacle began.

They did not see the missile strike. No eyes could follow the mass which struck at thousands of millions of miles per second, with all the stored energy in its impact that it had absorbed from the linkage-fields across its path. They could not even tell where it had struck.

**T**HEY saw only that the great sun swelled suddenly and swelled again with a monstrous and terrible deliberation, then seemed to pour out into all of space as if to devour it utterly. The timing was like the seemingly slow-motion process of water falling over Victoria Nyanza falls.

Actually it was of incredible vehemence and unthinkable force. The free energy within the sun had suddenly been tripled by the arrival of that supernal missile, which sank to the sun's very heart before its atoms could explode.

The sun literally detonated. Flaming ravening star-stuff shot outward at thousands of miles-per-second. A planet was engulfed—a second. A third, fourth, fifth and sixth.

Those on the *Stellaris* watched the sun become a nebula, a mass of incandescent gas filling a globe five-thousand-million miles across. And no planet lived in that inferno—no gigantic generator of power, able to supply thousands of murder-fleets light-millennia away, could still be functioning. The planet of the pyramid-ships was gone. Its sun had blown itself to vapor.

And no pyramid-ship anywhere in the galaxy had power.

Those in motion past the speed of light stayed in motion. There was no power in them to brake below the critical speed of the alloy of which they were made. Those below the speed of light had no power to rise to it. Those in planetary atmospheres fell heavily to the ground. Those grounded stayed aground.

But most of the murder-fleets out upon the errand of wholesale massacre so lately com-

manded and not yet completed—most of them drifted on unendingly. A few suns acquired small fleets of pyramidal satellites. One or two planets captured brightly-polished moons.

And of course there were some meteoric falls, which, when excavated, disclosed half-fused artifacts and dead aliens with bulbous heads and attenuated arms and legs. But most of the pyramid-ships simply drifted on—and on—and on.

Forever.

\* \* \* \* \*

When the *Stellaris* got back to her own solar system it was necessary to be very careful. Not because of fear from any Earth-defense but lest she do damage. The bow-weapon had to be turned off completely. Tractor and pressor scanning-beams could not be used, of course, when nearing a planet with so precariously poised a civilization as Earth's.

And then it was distinctly quaint that as she lowered heavily into atmosphere Earth-Government planes darted upon her, firing furiously, and had to be pushed away with pressors as the ship went tiredly to ground.

Then there were investigations and vast excitement and much indignation. Rod Cantrell, said solemn individuals in Earth Government, had departed from Earth without authorization in the only vessel capable of space-navigation and defense of the human race against certain strange alien space-ships which had plunged to their destruction upon the Earth's surface.

Who knew, said these indignant people, how many more alien ships were floating about outside the Earth's atmosphere, preparing for invasion and the capture of Sol's fairest planet?

Rod said curtly that there were no more alien ships about. Glowering a little, he made his report. Those who had been of the unwilling crew of the *Stellaris* substantiated it. The small round people of the planet of dead cities told in their fluting voices what had become of their race. Earth Government gave them a space-ship, ultimately; and they went back to build up their civilization anew.

In the end the court-martial at which this testimony came out was ended and Rod Cantrell was formally absolved of all penalty for having been on board the *Stellaris* when a short-circuit threw it into space.

He was cleared of all censure for having saved the ship and those in it and no blame—so the verdict ran—lay upon him for having fought the murderers of a thousand civilizations and for having certainly prevented the ending of humanity.

And then, as a separate and necessarily slow process, there began the tedious, red-tape-filled process of rewarding him. In the course of a year or so he would undoubtedly be given a medal.

But he was not concerned. A month after the *Stellaris*' return to Earth there were fluting sounds in the anteroom of the quarters he occupied. The leader of the colonists from

the planet of dead cities wished to confer with him. Rod liked the little round man but he begged off.

Kit said, "Why'd you do that, Rod? He's a nice little person."

"I know," said Rod. "But d'you remember how little attention I paid to you while we were off in the *Stellaris*?"

"I certainly do!" said Kit.

"I was busy," Rod explained amiably. "But I just got leave for our marriage and a honeymoon. And I thought that since I neglected you so much before—well—I thought I'd put everything else aside and pay a little attention to you now."



## Startling Oddities of Science

**S**EEING colors is a gift which is the property of only man among the mammals. While reptiles, birds and insects visualize in technicolor, the dog, cat and all other mammals are colorblind.

**C**ONTRARY to general belief, the coin vending machine is not a modern idea. Thousands of years ago the ancient Egyptians had such devices in their temples—with the payoff coming in holy water.

**I**N YEARS to come, scientists believe that man will evolve toward the Cyclops. Our umpty-great grandchildren will probably have a single orb in the center of their faces if current trends continue.

**E**ACH white dwarf star in the heavens has such appalling density that its weight is approximately one million pounds per square inch.

**N**OVAE occur at least twenty times per annum in this precarious universe of ours. Since it is generally estimated to be about two billion years old, some 40 billion stars, almost all in the cosmos, have burst.

**C**OMBATING sailors' superstitions about sailing on Fridays, the British Admiralty once laid the keel of H.M.S. Friday on the day in question, launched her and sent her to sea under a Captain Friday on the same day of the week. She was never heard from again.

**E**VERY second that passes sees an average evaporation of 16,000,000 tons of water over the surface of the earth—virtually all of which is returned in the form of precipitation.

# The ROAD to

**S**INCE archeologists have yet to learn just where Man originated on this planet we don't know what his first major travel problem was. It may have been the crossing of a mountain range or a wide river.

Whatever the problem, it must have looked



A German scientist examines the 1933 Magdeburg rocket motor

impossible to primitive Man—but he finally solved it.

His next travel problem was the crossing of open water. For thousands of years men must have sat on the shore and studied the blue expanse to the horizon, dreaming of navigable rafts that would one day penetrate the unknown.

Sails, oars and rudders were finally discovered and those navigable rafts were finally built.

Today Man is confronted with what may be his final travel problem. It is not the land across the river or in the valleys on the far side of the mountains or the unknown shore across the sea. Today his goal is the cold silverescence of the full moon, the brilliance of Venus or the reddish glow of Mars.

The problem, as always, is how to get there.

The idea of space travel is far from new. It began about the time of Christ when thinking folk of the Mediterranean regions first realized that the "lights in the sky" were very probably material worlds like our own. Naturally this concept led to curiosity as to what those other worlds were like—and curiosity inevitably led to a desire to visit them.

The idea of space travel was to remain a mere philosophic wish for some nineteen centuries. Considering that neither scientific discoveries nor relevant technological advances furnished any nourishment to the idea, it is a major miracle that it did not die quietly.

And when astronomy, thanks to the telescope, did begin to provide scientific information, it seemed to put space travel into the realm of permanent impossibilities.

## HOPE IN 1600

In 1600 Man could still hope for some sort of atmosphere between planets, so that space travel would be a mere extension of the problem of flight in air. By 1700 it was all too evident that space was a void. And by 1800, with the true interplanetary distances known, solution to the problem seemed crushed by its own sheer magnitude.

Actually, realization of the true requirements brought the solution closer. The true facts of astronomy did not prove the problem impossible—they merely revealed that the nature of the problem was very different from what had been previously supposed. It only needed some looking around to find new answers.

At first gravitation seemed to chain a

**A New Series by WILLY LEY**

# SPACE TRAVEL

## Part I THE LAST TWELVE YEARS

*In the first of a brilliant series of special articles, a world-famous authority on rockets chronicles the amazing progress which man has made toward interplanetary flight!*

hypothetical space-ship to its planet. Then it was realized that the same law insured predictability in space. The fact that space was a void implied no obstacle to attaining the enormous velocities needed to traverse interplanetary distances in reasonable time. And the means of bridging space was already known and applied in practise, both as

weapon and toy—the principle of the rocket.

Then came the first inklings of a technology applicable to space travel. In 1865 French author Achille Eyraud stated that a space-ship could be propelled by a *moteur à réaction*—or rocket. That same year Jules Verne

Johannes Winkler examines his second rocket, which he was not allowed to test



Primitive German rocket, 1932



published his famous novel in which a cannon fired a shot around the Moon. His theory boiled down to the correct one that space travel depends upon very high velocities.

### GANSWINDT COULD DO IT

In 1891 eccentric German inventor Hermann Ganswindt claimed ability to build a reaction-propelled space-ship if someone would give him sufficient funds. And in 1897 obscure Russian schoolteacher Konstantin E. Ziolkovsky insisted in numerous articles that a space-ship was possible—that it would be a gigantic rocket—and that it would use liquid fuels.

These views, first printed in 1903, sound surprisingly modern. But thanks to Ziolkovsky's obscurity and his inability to get his articles translated, his influence upon contemporaries was negligible. Had not subsequent developments backed up the soundness of his theories, he and they would have been forgotten.

### GODDARD'S REPORT

It was not until 1919 that the late Professor Robert H. Goddard published his now-famous Smithsonian paper, *A Method of Reaching Extreme Altitudes*. He knew nothing of Ziolkovsky. Nor did German Professor Hermann Oberth, whose similar volume, published in 1923, was the cornerstone upon which the Nazis later built their Peenemünde Research Institute, from which came the long-range V-2.

Professor Goddard saw the first liquid-fuel rocket lift itself off the ground in 1926—but this fact did not become generally known until ten years later. It is indicative of the scatter-gun history of early rocket development that a number of German scientists founded the German Rocket Society one year after that event, in July, 1927, and that the purpose of their society was to find out whether a liquid fuel rocket could be built!

They found out with some delay when, on March 14, 1931, the first president of the German Rocket Society, the late Johannes Winkler, sent his privately-built liquid-fuel rocket 2000 feet into the air. And the first liquid-fuel rocket of the society itself rose off the ground on the 10th of May of the same year.

All these rockets were ridiculously primitive contraptions which one man could carry

under one arm. They compared to the rockets of today in about the manner a rubber-string airplane model compares to a B-36. They employed the same basic natural laws, they embodied similar engineering principles and they did manage to get themselves into the air.

But they impressed only those who had been convinced in advance of the possibility of space flight through study of the theoretical works. By the time these first rockets staggered into the air, the theory of interplanetary travel was firmly nailed down in print and comparatively little has been added to it since.

### ENGINEERING A DIFFERENT STORY

The progress of rocket engineering is a different story. The last twelve years have brought advances in this field which even the most optimistic prophet would not have dared to forecast. There is no better way of showing what has been done than by studying the record of accomplishments during this period. — This is how things stood in 1936.

By then a number of test-stand experiments with liquid fuel motors had been made by several experimenters and experimenting groups, usually successfully. Dr. Robert H. Goddard and the American Rocket Society had worked with gasoline and liquid oxygen.

The German Rocket Society had worked with gasoline and liquid oxygen and (at my insistence) with alcohol-water mixtures and liquid oxygen. Johannes Winkler had worked with liquid oxygen and liquid methane. Dr. Eugen Sänger of the University of Vienna had worked with oxygen (both gaseous and liquid) and fuel oil.

The German engineer Friedrich Wilhelm Sander had worked with nitric acid as an oxidizer and a fuel he did not name. And the rocket research group of the German Army, which later was to grow into the Peenemünde Institute, had worked with alcohol and liquid oxygen.

None of these experimental rocket motors had even approached a thrust of 1000 pounds.

### A LOOK AT THE RECORD

By 1936 history could also have recorded a number of complete liquid-fuel rockets. Their builders were:

(1) American Rocket Society (gasoline and liquid oxygen)

(2) German Army, Ordnance Rocket Research Group under Count von Braun (alcohol and liquid oxygen)

(3) German Rocket Society (gasoline and liquid oxygen)

(4) Dr. R. H. Goddard (gasoline and liquid oxygen)

(5) Johannes Winkler (liquid methane and liquid oxygen)

With the exception of those rockets which will be mentioned in the next paragraph they were all small, weighing less than 50 pounds. The large ones were, in chronological order:

(A) The "Magdeburg Rocket" of the German Rocket Society's research group, finished in June 1933. It stood about 15 feet tall and was equipped with a rocket motor of 440 lbs. thrust. Its success remains problematical since one of its guiding rollers caught in the launching rack, ruining the take-off.

(B) Rocket A-2 (*Aggregate No. 2.*) of the German Army's research group. The rocket weighed about 330 lbs. at take-off, was equipped with a rocket motor capable of delivering a thrust of 660 lbs. and reached an altitude of 6500 feet in 1934.

(C) Dr. Goddard's rockets of 1935, tested near Mescalero Ranch, Roswell, New Mexico. These rockets also stood about 15 feet tall and were full of elaborate and advanced features but had comparatively small fuel tanks. Having an empty weight of about 60 lbs. they reached a maximum altitude of 7500 feet on May 31, 1935.

### RECORD OF PROGRESS

And this is how things stood in 1948, a dozen years later:

The number of test-stand experiments made during these twelve years may number as high as twenty thousand. They led to the experimental and/or operational use of a number of new fuel combinations, notably nitric acid and aniline (American), high-concentration hydrogen peroxide and alcohol with admixtures (German) and nitric acid and vinyl ethyl ether (code name "Visol"; German).

As for complete rockets:

A large liquid fuel rocket, called A-4 by its German originators and V-2 by everybody else, with a take-off weight of about 12 metric tons, carrying a warhead weighing one ton, had been used operationally over a range of 200 miles during the last stages of World War II.

A total of 4300 of these rockets had been fired operationally, rising to an altitude of about 65 miles along their trajectory. A vertical firing by the Germans had resulted in a peak altitude of 100.5 miles.

Near-vertical firings of such rockets from the White Sands Proving Ground in New Mexico had resulted in a maximum altitude of 116 miles, the rocket being loaded with scientific instruments weighing one full ton, including the weight of the containers.

The U. S. Army Ordnance rocket *WAC Corporal* had reached an altitude of 34 miles in early Spring, 1946.

The U. S. Navy rocket *Aerobee*, carrying 150 pounds of instruments, had reached an altitude of 78 miles on March 5, 1948.

### ROCKET PLANES

The German rocket-propelled airplane Messerschmitt Me-163B (code name *Komet*) had been flown operationally as an interceptor, using the "Walter" rocket motor, which burned high-strength hydrogen peroxide with alcohol to which some hydrazine hydrate was added. The Me-163B attained speeds up to 650 miles per hour. It was not designed for supersonic speeds.

The American rocket airplane XS-1 had reached supersonic speeds repeatedly during the summer of 1947.

The Navy rocket *Neptune* was nearing completion. About as tall as the 46-foot V-2, but with a slimmer waistline, the *Neptune* is designed to carry a 200-pound pay-load to an altitude of 235 miles. This corresponds roughly to the outer fringes of the earth's atmosphere. By the time this article appears in print the experiment may have been completed.

### A ROUGH OUTLINE

But this tabulation of the technological progress of the last twelve years is only a rough outline of accomplishment. More important than the figures mentioned are the implications of these achievements. Most of the things which appeared doubtful in 1936 have been proved (and generally used) in 1948.

To realize how much doubt has been cleared away during these twelve years I only have to think back to many conversations which took place in 1936. One in particular sticks in my mind.

It occurred in New York, in a room in the Hotel St. Moritz and my audience consisted of several engineers who were supposed to report to their bosses.

In the course of the conversation I was asked to draw a sketch of a large rocket, about midway between the then existing experimental types and a manned spaceship. That was easy and the result was something looking very much like a cross section of V-2.

I did not even have to think while making this diagram. There was one very much like it in Prof. Oberth's book. Furthermore the first Oberth rocket and the second Winkler rocket showed the same general arrangement.

That the second Winkler rocket had exploded at take-off and that the Oberth rocket had not functioned at all for lack of a suitable motor I deemed wise to leave unsaid. The finished diagram showed a torpedo-shaped body, with stabilizing fins at the lower end.

The rocket motor was between the stabilizing fins and above it, in succession, were tanks for fuel and oxidizer and a payload compartment in the nose.

### LIQUID FUEL PREFERRED

While making the drawing I explained the reasons for liquid fuel. One is the simple fact that the flow of a liquid through a tube (from tank to motor) is easy to control. Hence one can control thrust and even shut off the motor temporarily.

With solid fuels all these things are either completely impossible or very hard to accomplish. In a solid fuel rocket it is virtually inevitable that the "fuel tank" and the "combustion chamber" are one and the same thing. This means that most of the rocket has to withstand the pressure generated by the burning of the fuel *plus* the temperature which is generated in generous amounts along with the pressure.

This makes for a high dead weight and the prime criterion of a successful rocket is the ratio between dead weight and fuel load. And finally, liquid fuels happen to contain more energy per pound of weight.

"Ahem," said one of my listeners, "you say that such motors have actually burned?"

"Yes, Many times."

"They were all quite small?"

"Yes. A few had a few hundred pounds of thrust, most of them about sixty pounds. But

a rocket motor should be easy to enlarge."

"What, in your opinion, is the largest size that could be built?"

"I don't know, of course. Offhand I'd guess about three tons. If future rockets weigh more they would certainly need several motors."

*The V-2 motor has a thrust of 27 tons and it now seems that there is no upper limit to the size and thrust of a single motor.*

"That would mean that the tank for the oxygen might be large enough to hold several tons of liquid oxygen. How do you know that one could produce such quantities. The stuff evaporates while you make more."

"Judging by the performance of small amounts it should keep better the more you have."

"But you don't really know. You haven't really handled tons of it."

"No."

*One V-2 charge is 11,000 pounds of liquid oxygen, the tank cars used by the Germans operationally held three rocket charges. The handling of many ton lots, as we now know, does not present any special difficulties.*

"Such a motor," another one of my listeners said, "should burn out after a few seconds."

"Not if you cool it."

"Then you need extra cooling water. If the amounts of heat are large, as they are bound to be, you'll have trouble dissipating that heat."

### THEY DIDN'T BELIEVE ME

"You don't cool in the manner of an internal combustion engine. You use the fuel itself for cooling and when it gets warm you burn it."

"Ridiculous."

"But it has been done—it works."

"I don't believe it."

*By now almost everybody knows that rocket motors have what has come to be called "regenerative cooling."*

"Well, supposing it does work, how long would the motor last?"

"The Austrian, Dr. Sänger, reported fifteen minutes burning time. The highest I have seen myself was ninety seconds."

"That won't get you very far."

*Except, of course, that it is not the burning time that counts but the velocity reached by the rocket during its burning period. The V-2, with some 65 seconds burning time,*



continues to coast upwards for another 90 seconds or so, attaining an altitude of 110 miles.

The Neptune with less than half a minute longer burning time, will go to more than twice that altitude. And eight minutes burning time will carry to the Moon. The figure of eight minutes is high because it is based on what the pilot will probably be able to stand.

"You said"—somebody else joined the battle of words—"that it might be useful to shut off the motor for a while and then reignite it. Has that ever been done?"

"No, but it should be possible to develop an ignition system that can do it."

### IT HASN'T BEEN DONE?

"But it hasn't been actually done!"

Both the nitric acid plus aniline combination and the German hydrogen peroxide plus alcohol with hydrazine hydrate combination are self igniting, all you have to do is to bring them together. And the motor of the XS-1, developed by Reaction Motors, Inc. has demonstrated re-ignition in flight nicely, even though its fuels are not self-igniting.

"I saw a German movie recently"—the reference was to Fritz Lang's *Girl in the Moon*—"where things almost went wrong because the pilot nearly fainted before he could shut off the motor. What would happen if he really fainted?"

"He could just faint away. The job of cutting off the fuel when the proper velocity has been reached would be intrusted to a robot mechanism."

"Robots in the rocket! How could a mechanism sense the true velocity if there is no air outside against which it can work!"

The V-2 has a mechanism just like this. It is known to engineers as the "integrating accelerometer" and you can carry it in a suitcase.

"Well, let's suppose the pilot doesn't faint. He still could not steer in space."

### DOUBT IN '36

"He could not steer against an airstream, true, because there is no air. But he will probably have separate smaller motors for steering. It might also be possible to steer by means of vanes in the exhaust blast."

"I'm sure, they wouldn't last long—if it can be done at all, which I doubt."

The idea of inserting a vane in the exhaust jet had been voiced several times then, but even most rocket people doubted it. Actually Dr. Goddard had made the experiment successfully by that time, using vanes touching the exhaust.

A few years later the Germans inserted vanes into the exhaust and the V-2 operates that way. Personally I prefer Dr. Goddard's method. Separate steering jets are still possible but so far nobody seems to have actually used them.

Then somebody fired the final round.

"All this is nonsense anyway. A rocket can't work in empty space. What has it got to kick against?"

Thus the meeting ended with a round of drinks and general head-shaking. The drinks, I seem to remember, were good.



Coming in the Next Issue

## THE ROAD TO SPACE TRAVEL

### Part II: THE NEXT TWELVE YEARS

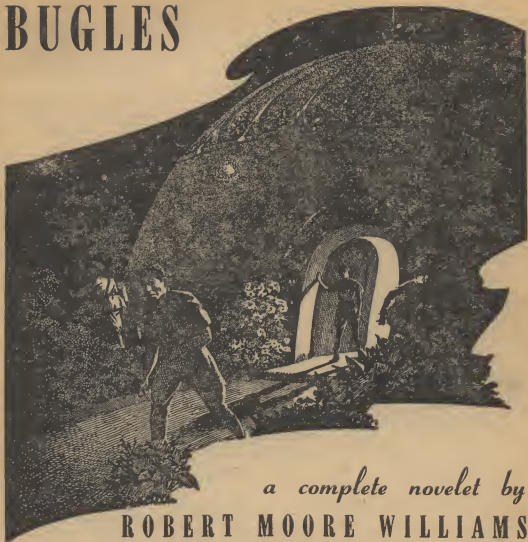
By WILLY LEY

# THE SOUND OF

Dook screamed in mortal pain as the ball touched him



# BUGLES



*a complete novelet by*

**ROBERT MOORE WILLIAMS**

## CHAPTER I

### *The Great Doak*

**T**HE SHIP from Earth arrived in midafternoon. Kennedy, working himself and his two assistants into nervous exhaustion setting up recording instruments around the rectangle of white sand, saw the ship come in. At first he was afraid it was

going to land in the rectangle where the Martians, at this moment, were forbidding even a fly to trespass, but the pilot changed course slightly and set it down, with much blowing of landing jets, less than a quarter of a mile away.

Kennedy was relieved. It had taken a lot of talking and, considering the language difficulties involved, a lot of arm waving and

*“By the sweat of your brow shall ye earn your daily bread—” is still true on the hard-working Earth—but what of the fiery Planet of Mars?*

picture drawing, to get Tryor to give him permission to set up his recording instruments so near the rectangle.

The Martian had not fully liked the idea of the recording instruments and Kennedy suspected that if Tryor had really understood their purpose, which was to trace the lines of force flowing from the machinery that *must* be hidden somewhere here in this city, and thus locate the machinery itself, he would have liked it even less. Kennedy wondered what the Martian would have said, and done, if some blundering human had landed a space ship in this restricted area.

For that matter, why had the ship landed here at all? Traxia was a small, unimportant city, well off the routes of even the tourists rich enough and hardy enough to make a trip to Mars.

Watching, he saw the port swing open. Three men emerged.

For a few minutes they stared around, looking at the city set like a small jewel in a cup in the desert, looking at the sand and the sun and at the range of low hills off to the south, accustoming themselves to the lesser gravity of the Red Planet, then they spotted Kennedy and his two assistants. One flung up an arm to point. Kennedy swore. Of course, newcomers would head straight toward the nearest humans in sight, in fact, the only humans in the city of Traxia.

"Probably to ask us for a road map!" he said. He had no time to answer questions. And no interest in answering them. But the three men were moving toward him with sure purposefulness.

They came up, three stalwart fellows in trim uniforms, straight to him. "Beg pardon," their leader said. "We're looking for Mr. John Kennedy. Could you tell us where to find him?"

Kennedy stared at them. He had never seen them before. But he had seen the likes of them brawling in the streets of the New York Space Port, drunk and raising Cain, and in Mars Port, and in Moon Port, where the glass of the enclosed city area looked up at the frozen sky. The breed was the same all over.

"I'm John Kennedy," he said. "What do you want?"

"Mr. Doak's compliments, sir. He will see you in his cabin, immediately," said the spokesman.

"Mr. Doak? And who is he? Your captain?"

VARYING shades of surprise showed on the faces of the three men. "You don't know Mr. Doak? He—he's the owner." The speaker seemed astonished to learn that anybody lived in the system who didn't know Doak.

"I don't know him," Kennedy said. "I don't know that I want to know him—"

Behind him, he heard Blount stir protestingly. Blount and Anders were his two assistants.

"I've heard of him," Blount said. "He's a financier, or something like that. He put up the money to finance Threlkeld's investigation of the ultra-drive for UN."

"Come to think of it," Anders spoke for the first time. "I think he put up part of the money to finance *us*."

"Uh," Kennedy said. He was a field man for the UN Council of Science and he was responsible to the Council and to nobody else. The Council paid him and furnished the money for his work. It was their job to find the money and his job to do the work, a division of labor which satisfied him. But if Doak had put up part of the money, he felt he had to be nice to the fellow, for the sake of the Council.

"I'm busy now," he said, his eyes straying to the rectangle of sand where the Martian guards stood elbow to elbow. "Tell Mr. Doak I'll see him tomorrow." He turned back to his instrument.

It was a magnetic detector and it was designed to detect and to trace lines of magnetic flux now present—or soon to be present—in this area. He was aware of the man speaking again.

"But Mr. Doak said *immediately*."

"I'm busy now. He'll have to wait."

"Mr. Doak is not used to waiting."

"Then he'll have to get used to it."

"But this is important," the man from the ship insisted.

"I'll say it is!" Kennedy said, glancing up at the rectangle of white sand.

Blount cleared his throat. "I don't want to urge you, but Anders and I can take care of everything here."

"*Et tu, Brute*," Kennedy said. He was perplexed and indignant. It was most important that he stay right where he was but it was also important that he do nothing that might shut off part of the flow of funds to the Council. He glanced at his watch. Thirty-three minutes before the deadline Tryor had set.

"All right," he said, impatiently. "But I've got to be back here in twenty minutes."

Swearing under his breath, he stalked off across the sand toward the waiting ship. The three men followed him. The lines of Martians guarding the rectangle watched without obvious curiosity. What were the doings of this brawling race to them, who had inherited a thousand centuries of tradition and wisdom? And something else, which they had never revealed to any man.

Doak was a big man with heavy shoulders and a thick neck on which his bullet-like head sat like an impatient gargoyle. His face was the face of a frog that had huffed and puffed and huffed and puffed and blown himself up until he was as big as a man. They shook hands. Doak seemed to think it was the thing to do.

The cabin was richly furnished, with a big desk with a row of push buttons on it, and a swivel chair, both bolted to the floor. There was a viewport with the sun screen open, so that the city of Traxia and the rectangle of sand and the Martian guards and Blount and Anders were visible.

"You wanted to see me?" Kennedy said. He would be polite if it killed him.

"Yes, yes. I read a copy of your report."

"You read my report?" Kennedy repeated the words, in a whisper, to make certain he had heard them just right.

"Yes. Your report to the executive committee of the Council on your preliminary investigations on Mars." Doak gestured toward the viewport. "It was very interesting. In fact, it was the reason for my coming here."

"I'm glad you found it interesting," Kennedy said. "It was also marked TS—Top Secret. Or I thought it was marked that way."

"It was so marked," Doak said.

"Are you on the Executive Committee? Any report marked TS and addressed to a committee is usually read only by the members themselves."

**D**OAK showed no signs of embarrassment.

"That is true. However a few of us—" he hesitated.

"VIPs," Kennedy supplied. "Very Important Peoples. I get it." His voice took on a cutting edge and he stared with obvious distaste at the man sitting across the desk from him. In the back of his mind, a cloud

no bigger than a man's hand, was the sudden feeling of fear.

Out of the corner of his eyes, he could see the rectangle of sand, and beyond that the city of Traxia.

A garden spot, a city of bright crystal domes of rose and amethyst and coral and sky blue, a city of winding walks that curved in and around the low domes in eye-delighting variety. A flower garden, where bloomed in carefully tended plots every exotic flower that had ever put forth blossoms into the thin air of this ancient planet.

Running along each walk were streams of bright clear water, irrigating the flowers, adding freshness and beauty to a spot already so beautiful that an artist would go mad trying to catch the color tones and the balanced symmetry of dissymmetry expressed in changing curve and shifting straight line. Beyond the city was the main canal going off to the low hills which once had formed the shed from which this city drew its water.

The reservoir was still there, the hills were there, all open to the sky from which no rain had fallen for a hundred centuries. And the water was there too, in the reservoir. It was always there, flowing through conduits that had been built when water fell from clouds the way water was supposed to fall.

Kennedy had seen the watershed, the reservoir, the canals. He had studied everything—and the result of his study had been baffled, bewildered perplexity. Moses, where art thou? he thought. Moses, with thy staff to strike the rock!

The block of pure white sand was there too, like unexposed picture film, like clay waiting the touch of the modeler's fingers, like marble awaiting the sculptor's chisel, like—Kennedy shook his head. Tryor had permitted him to examine the blueprints, complete in every detail, every curve of every walk, every flower bed, every rounded dome of pearl or coral. Yes, Tryor had said, the population increased. Slowly to be sure, but it increased. And increased living quarters were needed—Doak spoke again.

"I was greatly interested in your account of the Martian eating habits. You said they eat essentially the same basic foods we do, with perhaps some variation in the subtle vitamins."

"That's right," Kennedy said.

"But you added that you had not been able to discover the source of the Martian food supply."

For a second, Kennedy hesitated. That, of course, was the essence of the report. It was also, in essence, the secret of Traxia, and of every other city on the Red Planet. He nodded, slowly.

"Nor have I been able to discover the source of their water," he said.

"But hang it, man, they eat, don't they?" Kennedy nodded.

"They drink water, don't they?"

"They do."

"It's got to come from somewhere, hasn't it?"

"Has it?" Kennedy said.

**D**OAK's face revealed that he liked neither the answer nor the attitude of this field man. "What about farms?" he said. "Don't they raise their grain on farms?"

"I haven't seen a farm on Mars," Kennedy answered.

"Hydroponics, then?"

"Once they used such a system," Kennedy answered. He had asked Tryor the same question at least fifty times, before the Martian had finally understood and had answered. "But not in the last five thousand years."

He looked at his watch. He could give Doak five more minutes.

"But they manufacture their food from grain, don't they?"

"They certainly do," Kennedy answered. He had studied that too, as he had studied the water supply, with much the same result. "They have storage bins in every city in which they keep their grain, the greater part of which consists of a cereal much like wheat. They mill it much as we do on earth and it comes out a very good grade of flour. From there it goes to the individual homes and is baked into a hard bread which they call *yussa*—"

"But how does the grain get into the elevators?" Doak demanded.

"That is what I have never been able to discover," Kennedy said. He rose to his feet. "Nice to meet you, Mr. Doak. I imagine I'll be seeing more of you before you leave."

He held out his hand.

Doak didn't rise to speed the parting guest. He didn't seem to see the extended hand. His eyes came up to Kennedy's face and his gaze was cold.

"Sit down," he said.

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## CHAPTER II

### *The Pressure Goes On*

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**K**ENNEDY lifted one eye-brow an eighth of an inch. He had always described himself as one part scientist, one part mystic, and one part adventurer. The remaining quarter of him was pure cut-throat. He was a combination of qualities and character-traits that would have driven a psychiatrist cock-eyed trying to follow the curves and twists and angles and knotty knobs of his personality.

As a field man for the Council, he had had need for every knotty knob on his personality, as well as a need for the knowledge of how to use a pair of brass knuckles expertly in a knock-down drag-out fight, with the loser getting a pair of spaceman's landing boots on his head the instant he was knocked down.

Doak, apparently, had only read his report and had not gone to the trouble of checking on the man who had written it, automatically assuming that a scientist good enough to be a field man would be hollow chested, have flat feet, wear glasses, and would possess the daring of a rabbit whose mother had been frightened by an atom bomb.

The fact that Kennedy was none of these things, that he stood a good six feet tall and was broad in proportion, that he had hot gray eyes and did not wear glasses, did not seem to mean anything to Doak. So the financier said, "Sit down."

"Go chase yourself," Kennedy said.

Doak blinked. "I—"

"That's from me, personally," Kennedy said. "It is entirely unofficial."

Doak sat up very straight in his chair. Kennedy, the cut-throat in him very much in control, knew he shouldn't do this. But he knew he was going to do it. Reaching across the desk, he placed one big hand on Doak's shoulder—and shoved down.

When he finished shoving, Doak was sitting very low in the chair. The financier looked like a surprised frog that had tried to duck hastily under water but had forgotten to close his mouth as he went under. Kennedy grinned at him, sweetly.

"Again unofficially, but so far as I am con-

cerned, you can jump in the lake!"

Doak tried to shove the chair out of his way, forgetting it was bolted to the floor. He kicked at it and got to his feet. Kennedy, already thinking the man looked like a frog, had no difficulty in imagining the frog spewing water from its mouth as it came up.

"Do you know who I am?" Doak said.

"I don't give a cuss," Kennedy said. "Take it easy, big shot. And if you discover the source of the Martian grain supply, and of their water, and their homes and everything else they possess, let me know, will you? I'm curious myself." He turned to the door.

Doak opened the drawer of his desk. The gun there was an automatic, flat and thin, but no doubt efficient. Kennedy, looking at the gun in Doak's hand, saw that he had made a mistake. Or maybe it wasn't a mistake. He had at least forced the issue to a head and knew exactly where he stood—in front of a gun.

"Do you know who I am?" Kennedy said.

"I know," Doak answered. "And I don't give a hoot, either. Sit down, Kennedy. I want to talk to you."

"I'm a field man—" Kennedy started to say, then shut up. He had intended to say that, as a field man for the UN, he packed a little weight himself. But, looking at the gun, he realized that all the weight he actually packed was concentrated in his ability to write a report which would be read by somebody back on Earth, and, presumably, after going through the proper channels, would be acted on.

All of which would take a year. Presuming he was able to write the report in the first place. Presuming he had a chance to send it back to Earth. And presuming Doak wasn't able to interfere with the operation of the proper channels, which was doubtful, in view of his ability to read a TS report.

Kennedy looked at the gun again. From his position at this moment, Earth was a long way off. The gun was right here. He sat down.

Doak grinned. "I read your report with great interest. In it, you hinted that a miracle was responsible for the Martian food and water supply."

"I hinted at no such thing. A miracle involves the contradiction of known natural laws. So I did not talk of a miracle. But I did hint that the Martians seemed to know the secret of spontaneous generation of mat-

ter." Angry tones sounded in his voice as if he had tried to understand and had failed and was angry at his inability to grasp the solution.

**B**UT he knew it was not a solution you just reached out and grasped, as a hungry man reaches for a hamburger.

"Something from nothing?" Doak said.

Kennedy shook his head. "Shall we say that something tangible to our senses comes from something intangible to our senses. It makes a little more sense if you put it this way. Though not much more." He shook his head again.

"I don't understand this," Doak said.

"I don't either."

"I want to understand it."

"So do I," Kennedy answered. His tone was flippant. Deliberately so. Doak's eyes glinted.

The financier toyed with the pistol. "You are a competent scientist; otherwise you would not be a field man for the UN. You have been here almost two years, spending my money, investigating this phenomenon, without results? How do you explain your failure?"

"I don't explain it. I have a hunch I can easily spend the rest of my life here, without results."

"I think you're lying," Doak said. "I think you have made important discoveries and are attempting to conceal them." He sounded outraged.

"You're welcome to your opinion," Kennedy said. He glanced at his watch, then toward the viewport. "In just a couple of minutes, you will know as much as I do. Look."

Involuntarily Doak turned toward the port, then spun quickly back to face Kennedy, jerking up the gun as he did so. The field man hadn't moved from his chair. Kennedy laughed.

"Did you think I was trying to trick you? I wasn't. Watch that rectangle."

Doak's face was alive with suspicion. "But nothing is there, except guards around a patch of sand."

"Watch!" Kennedy said. . . .

In the sunlight the sand was smooth and even. It had been smoothed and resmoothed during the preceding weeks, in preparation for this event, until Kennedy had had the impression that every grain of sand had been counted. The thought made him uneasy,

vaguely apprehensive. Machinery that took into consideration every grain of sand—What kind of machinery was that?

Outside the guards, the inhabitants of Traxia had gathered and were quietly watching. Kennedy could see Blount and Anders, busy with the recording equipment designed to trace that hidden machinery. Where was it? Under the city? Or elsewhere on the planet? Blount was looking often toward the ship, watching for Kennedy to return.

Came the blue haze.

It came from nowhere. It came suddenly, with no sign to indicate it was on the way. It looked like wood-smoke on far-off hills. It fitted the rectangle of white sand, exactly.

Kennedy came to his feet. Doak snatched up the muzzle of the pistol to cover him but he strode to the viewport without noticing the weapon. And Doak, after glancing at him, let the gun fall to his side. Doak watched too.

The blue haze thickened. Far-off came a soft crystalline chiming like glass bells ringing as they blew in a gentle breeze. The sound of the bells entered the ship. Kennedy wondered how that fragile chiming penetrated the insulated steel hull, but penetrate it did, a distant muted chiming, like atoms rearranging themselves within a crystal lattice. Within the blue haze the sand began to move. Nothing moved it. But it moved.

Blount and Anders were working with feverish speed. The instruments they were operating were enormously more sensitive than human senses. Kennedy wondered if they were sensitive enough to catch a glimpse of the sand movers. He was cold, cold. In the blue haze, shapes were taking outline. Like mushrooms, they grew. They firmed and their outlines hardened.

"Domes!" Kennedy whispered.

Somewhere ringing bells exulted. The walks began to take form.

"Where are those things coming from?" Doak gasped.

"Shut up," Kennedy growled, deep in his throat.

**U**NNOTICED, the conduits along the walks had gone in—and had been connected with the regular conduits from the city. Water flowed now along the walks. It moved along the porous conduits seeking—the shrubs, the plants, the flowers, came out of nowhere. Kennedy held his breath.

The swirling crystal notes leaped up in a flood—and died. The blue haze vanished. Before Kennedy's eyes, on what had been a rectangle of white sand, was—a new subdivision of the city.

The domes were dwelling places for a dozen families, perhaps more, perhaps less. Each complete with a flower garden. Soil and water where there had been sand. Flowers blooming in the desert.

The guards moved from their positions. During the time when the blue haze had been in existence, the watching Martians had not moved. Not an inch. Now they began to file through the newly created section of their city, examining the workmanship, seeing that everything was right, checking up to see if the sand movers had done their job well. Or were they admiring the beauty of the place? Kennedy did not know. Blount was looking desperately toward the ship.

"How'd they do that?" Doak croaked.

Kennedy shrugged. "You saw it. You know as much as I do. But that is the way they get their grain—and their water. The storage bins and the reservoirs—just fill up."

"But you must know something of the process," Doak said, desperately. "You've been here two years. You're a competent sci—"

"Blast it, man, that's what I've been trying to discover!"

Doak hesitated, his eyes on Kennedy. The frog face was labored with thought. A tongue flicked out and ran along the dry lips.

"How would you like to continue, on my pay-roll?" Doak said.

"What?" Kennedy gasped.

"At a hundred thousand a year!" Doak said.

"A hundred thousand dollars!"

"With a bonus of half a million dollars, if you solve the secret," Doak added.

Kennedy laughed. He couldn't help it. It was time to laugh. The offer was so silly it was ridiculous.

"I'll make the bonus a million," Doak said.

Kennedy gestured toward the viewport. "You idiot! If I knew that secret, what would a million dollars mean to me? Or ten million?"

Doak's face hardened. "I was afraid you would think of that," he said. He moved quickly, to place the desk between him and



Kennedy. "So I prepared another inducement. I believe that back on earth, in Miss Guthrie's private school, you have a twelve-year old daughter?"

"What?" The sound from Kennedy's throat indicated vocal chords in danger of being torn out by the roots.

Holding the gun ready, Doak took a newspaper clipping from his desk. He shoved it toward Kennedy.

#### CHILD MISSING FROM EXCLUSIVE SCHOOL

Joan Kennedy, 12-year-old daughter of a UN employee, was reported missing yesterday. The child, whose mother is dead and whose father is reported to be on Mars on an exploring trip, has been living with an aunt. No evidence of violence was found.

The muscles in Kennedy's neck became ropes. The veins stood out on his forehead. His face turned dull gray. "You rat! Is it worth that, to you?"

"Yes," Doak said.

"Why?"

Doak's eyes glinted. "If they can create water and grain—and a complete subdivision—they can create other things."

"What things?"

"That's my business. Your business is to find out how. That's all. My salary and bonus offer still holds good. In addition—" the gun centered on Kennedy's stomach. "—you will get your child back, unharmed."

Kennedy cursed softly. He wiped sweat from his face, and wished there was some way to wipe sweat from the human soul.

"We're working on it, right now," he said.

"Those two men are my assistants. The equipment they have set up is designed to trace the machinery that created the new homes."

Doak's eyes became alive. "There is machinery?"

"There must be."

"But it is hidden?"

"Well hidden!"

"Do you think your men have succeeded in locating it?"

"I don't know," Kennedy answered. "But even if they have got a line on it, we may need time to locate the hiding place."

"How much time?"

"A week, a month, six months. Man, I don't know!"

"Go ask them what they have discovered. Report back to me here at noon tomorrow. And one more thing—" The eyes in the frog

face were like shiny beads. "Don't try anything, Kennedy. This ship is well armed. My men are loyal." He nodded toward the clipping lying on his desk. "And even if you tried to kill me, and succeeded, there would still be this."

## CHAPTER III

### *Miracle on Mars*

IN THE strained silence, Kennedy could hear himself breathing. "Suppose what we saw—was actually a miracle?"

"Miracles result from the operation of unknown laws. Just take the *us* out of that word, Kennedy."

"But what if I can't?"

Doak considered the question. "The Martians know where the machinery is located and how it operates," he said at last. "I can get the information from them, if you fail." He pressed a button on his desk. Behind Kennedy a door opened.

"Show this gentleman out," Doak said, to the guard who entered.

Kennedy left the ship and walked over to where Blount and Anders were fussing with the instrument. They seemed to be disgruntled and confused. When he asked them what they had discovered, they paid no attention. He repeated the question and Blount swung around with outstretched hands.

"But we didn't get a thing," Blount said. "Not a single thing." His voice was angry. Kennedy could see he was afraid.

"What?" Kennedy said.

Blount made a quick gesture. "Oh, we got a lot of stuff, before and after pictures, a partial spec analysis of that blue smoke, but we didn't get a single tracer on the source."

"But that's impossible!" The pressure of the emotions in Kennedy turned his normal voice into a shout. "We saw matter manipulated. That means titanic forces were at work. The magnitude of the energies flowing in that area while those domes were being constructed was great enough to strain space itself. The control forces did not have to be equally strong but they had to be powerful enough for our instruments to detect them. You blundered."

Blount shrugged. He was hurt at what his chief said and at the tone used. But more than anything else, he was scared. His fingers were trembling and his left cheek was developing a tic.

"We've got to find that machinery," Kennedy continued. "Got to! I was depending on getting a line on it from the creation of this subdivision."

"I know," Blount said. "But we didn't. Either the control forces bypassed our detectors or our equipment wasn't sensitive enough to catch them. You can look at the recordings yourself."

Kennedy turned away. If Blount said the recordings were blank, then there was no use in anyone else looking.

In the west the sun was setting in a cloudless sky. Long shadows reached out from Traxia. The new subdivision was already in shadow.

The population had increased, Tryor had said. So new housing had been provided. It was as simple as that. And as complicated. Back on Earth, building a new subdivision was also a complicated process, though the complications were different. They involved capital and labor, the work of skilled men, conformity with a building code, and the subtle factors of profit. And other things.

Trees were chopped down and the trunks sawed into lumber. Clay was dug and pressed into bricks. The lumber and the bricks were fitted together, each in its proper place. Copper was dug for electric wires and iron for nails. Gravel and cement for the foundation. If plastics were used, the manufacturing processes were different, but the end-product was the same and had the same function—a house where people lived.

On Earth you could follow every step of the process if you wished. You could watch the trees being cut, the brick clay being dug. You could see the raw materials with your eyes, feel them with your fingers, taste them, smell them. You could watch the men building the house, hear the ring of hammers driving nails, the rasp of the saw cutting boards to exact lengths.

Here on Mars you saw figures moving in a blue haze, you heard atomic bells ringing. Then the haze was gone and the end product was before your eyes. Dazed, you talked of miracles.

In a ship from Earth was a man who wanted the secret of that miracle. Kennedy

did not doubt that he knew the reason why Doak wanted that secret. It was not wealth. Doak already had the secret of wealth. It was power. The same process used to create a new subdivision could also be used to create a fleet of space ships. The machinery would have to be modified, the blueprints changed. That was all. The man who knew that secret would have power over all men.

AT THE thought, Kennedy knew he would cheerfully cut Doak's throat from ear to ear and spit in the man's face as he bled to death. When he thought of the twelve-year-old child, kidnaped back on Earth where such things could happen, he knew he would gladly use his fingernails to tear Doak's jugular vein from his throat. Fingernails were the far-removed remnants of the claws that men had needed once, to live, and needed still, and would need as long as there were Doaks in the universe.

A step sounded in the sand. Blount was there beside him.

"What's wrong?" Blount said quietly. "I know something is."

With Blount was Tryor. The Martian's ears, large for picking up every sound transmitted by the thin atmosphere, were turned toward Kennedy, questioningly. His figure was almost identical with the human figure, except for the larger, movable ears and the slightly smaller eyes with their extra membrane to cut out the sand glare in the daylight.

With slight variations, nature had apparently almost duplicated the human body here on Mars. As to whether or not nature had duplicated the human mind, no one knew. Kennedy suspected it had not. Ever since he had arrived here he had felt that the Martian mind was different but where that difference lay, he did not know.

Kennedy looked at the Martian. In his mind a slow thought turned. Tryor knew where the machinery was hidden. If he could reach the Martian's mind, convince Tryor of his desperate need! His eyes went to the ship, dull in the growing twilight. The hate in his eyes was a living thing.

Tryor's ears stood straight up. "Help," the Martian whispered. "You want—you need—" He fumbled with unfamiliar sounds and with alien concepts back of them. "You—need help?" he questioned.

"Yes!" Kennedy breathed. He told them what had happened.

"It's not possible!" Bount, instantly angry, blurted out. "He can't get away with this. Kidnaping and extortion are felonies. I don't care who Doak is, he can be put in jail for the rest of his life."

"He can be but will he be?" Kennedy answered. "The courts and the jails are on Earth. Doak is here. Tryor—"

The listening Martian had not understood one word in ten. His ears drooped and he appeared to meditate. Kennedy waited. Wild thoughts of shaking the information from the Martian mind flashed through his brain. Hopeless thoughts. There was no way of shaking comprehension from a mind. And comprehension was what was needed.

Kennedy had discussed both the source of the water supply and the grain with Tryor. The result had been embarrassment on both sides. Tryor had tried to explain. He had tried hard and long. Kennedy had been embarrassed because he had begun to suspect he didn't have the mental equipment to understand the explanation.

Tryor's embarrassment, he had suspected, had resulted from the unwillingness of the Martian to point out the deficiency of the human brain. The Martians were the politest people he had ever known, much too polite to embarrass a guest by saying or hinting that he was actually only a high-grade moron.

"Again?" the Martian whispered.

Kennedy told it again. He included the fact that his equipment had been set up with the idea of locating the hidden machinery. Tryor seemed not to mind that at all. Kennedy was relieved. Though there might have seemed to be an element of trickery in his own actions, he knew in his heart that he had been motivated by the desire to know, and by nothing else. Tryor seemed to understand, and to approve.

But the rest of it—

"*Mond notal te?*" the Martian said. ("Can you draw me a picture?")

Kennedy sighed. Always the Martians wanted a picture.

"Come my house," the Martian said. "Draw picture."

"You stay here," Kennedy said to Blount. "I'm going to try to draw a picture of the word 'help.'"

"You don't need to draw a picture for me," Blount said, hotly.

"I know. But you can't work miracles either." He looked at the ship and again the

hate in his eyes was a living thing. Doak, you made a mistake, he thought.

SIDE by side, Kennedy and the Martian walked toward the city. They passed through the new section that had been added. The residents were already in their new homes, preparing the evening meal.

On a plot of grass, a child was playing with a ball. He left off to wave at the strange alien striding along the winding walk. Kennedy waved back. In the thin soft air was the fragrance of flowers, blooms growing where an hour earlier had been the sand of the desert. A musical instrument was tinkling.

"This is Paradise," Kennedy whispered.

"Paradise?" Tryor sought the meaning of the word. "Picture?" he said, hopefully.

"There are no pictures of Paradise. It's only a dream of a land without hunger and without cold, without fear, where all men have enough and none too much. You've got it here in this city. Or you had it." He looked back at the space ship resting on the sand. "Now the serpent is at your gate—in a space ship."

"Serpent?" Tryor questioned.

Kennedy uttered an exclamation of despair and sighed.

Tryor lived in a rose-colored dome. Red flowers bloomed beside the door. On the walk, Kennedy paused. "This house?" He made gestures with his hands. "Was it made like the domes I saw yesterday?"

"Yes," Tryor said. "Of course. How else?"

The question seemed to astonish him. The fact that he had understood it astonished Kennedy and gave him hope. Not much hope, perhaps, but a little. They entered the dome. Soft lights sprang into existence as they crossed the threshold. Kennedy had never ceased being amazed at the feeling of comfort in this simply-furnished place. Even more than comfort, the feeling here was of fitness, of rapport with ancient unities.

He knew that Tryor spent much time here, reclining on the low couch against the wall, apparently asleep. But actually not sleeping. Dreaming would be a better word for it. Dreaming seemed to be the main occupation of all Martians.

A people who lived in a land where manna fell from heaven and housing problems were solved by miracles could afford to dream.

But humans could not. Humans still had to get things by hard work. They still had to fight and sweat, to know neither security nor peace of mind. Bugles always blowing! The challenge of soil and weather, of desert, mountain, and sea, the challenge of the atom and of space, these men had met. Did the bugles ever cease?

Here on Mars they had ceased. Or had never blown. But Kennedy knew that was not the correct answer. The slow failure of the water supply over the centuries had been in itself a supreme challenge. The Martians had solved it. And had solved all other problems with it.

Somewhere there was machinery!

Many times Kennedy had imagined the nature of that machine. It was not a mechanical device of turning gears and sliding valves. That was much too crude. Nor spinning generators nor grunting atom giants. Still much too crude. It was a machine in which the moving parts were molecules or atoms or parts of atoms. Maybe it was electrical, maybe it utilized some form of energy that men had not discovered. Out from it flowed subtle lines of force that transformed sand, or perhaps the intimate fabric of space itself, into pre-determined forms.

"Picture?" Tryor said, hopefully.

Kennedy tried to draw a picture of the word *Help*. True, Tryor had used the word but the Martian had not really understood it. All he had got was an impression of need. It was Kennedy's task to translate that impression into concrete terms. Once Tryor got that much it would be necessary to translate Doak and Doak's purpose into terms that Tryor could grasp.

Kennedy drew a picture of two men, one drowning in a pool, the other standing on the bank. The man in the pool was reaching up a despairing hand to the man on the bank.

Tryor studied it and looked up brightly to Kennedy. He got the idea. "Water?" he said, happily. "You want water?"

"No!" Kennedy said.

"Bath?" Tryor said.

"No," Kennedy said.

**H**E DREW another picture, this time of a woman and child, gaunt and starved. Beside them a fat man gobbled food from an overloaded table. They held out their hands to the eater, begging for crumbs, for life, for help.

Tryor studied the picture. He shook his head. "Wait," he said. He left the house.

When he returned, he had six Martians with him. One by one they examined the pictures while Kennedy tried in every way he knew to tell them what he needed and what they needed. If he failed, they were in danger. Before Doak was through with them, they too, would need help.

Not one of them got the idea. Suddenly Tryor brightened and left the room. He returned with the child that had been playing ball. At sight of the youngster the Martians nodded to each other.

The child studied the pictures. He shrugged, bounced his ball on the floor, and spoke rapidly in the ringing bell tones of the Martian language, bell tones with sound nuances so subtle that no human ear had ever been able to grasp them. The Martians listened. They turned to Kennedy. He saw comprehension in their eyes.

"A kid gets the idea where they don't get it," he mumbled. He was acutely uncomfortable.

"Help," Tryor rolled the word around his tongue. He had the idea now and was shocked by it. His face showed pain. Kennedy could see the Martian testing the word for its fringe meanings, following the idea out from its basic root meaning to its subtle secondary implications. If you needed help you were in danger, if you were in danger it was because something threatened you. What threatened Kennedy?

The field man drew a picture of Doak and of the space ship, he put a knife in Doak's hand, and drew another picture of himself with the knife threatening him. The child looked frightened. But he translated this picture too. And the Martians understood at least that Doak threatened Kennedy, and them.

They whispered to each other. Tryor spread his hands. "What do?"

Kennedy, with sweat on his hands, drew what he hoped was his last picture—of the new subdivision coming into existence. From it he drew lines of force radiating to the source of that construction miracle.

"The machines," he whispered. "The machines that can create a subdivision can also create weapons, forces powerful enough to disintegrate Doak and his space ship. Where are the machines?"

This was his plan, to use the titanic energies involved in the miracle his own eyes

had seen, to obliterate the enemy at the gate.

"Machines?" Tryor's voice wondered over the meaning of the word. "What machines? There are no machines."

"No machines?" Kennedy gasped. Deep in his heart he knew that Tryor must be lying. There had to be machines. Perhaps Tryor had not actually grasped how vital was the compulsion that drove him.

Kennedy drew his last picture then, of Doak with a knife in his hand. But now the knife was presented at the throat of a child.

## CHAPTER IV

### *Helping Hand*

CRUDE and melodramatic as was the drawing, it was no more so than life itself. And it was presented on a level so low as to prevent misunderstanding of its meaning. Basic concepts were here, the rawness of a knife and of death. The voice of the Martian child translating the drawing was the plaintive note of a frightened bird awakening in the night and crying out in fear. The child understood the meaning of that picture, too well. His soft whimper filled the room.

Instantly Tryor was on his knees beside the child, whispering to him, patting him, telling him everything would be all right. The other Martians crowded around. Kennedy was forgotten. The Martians patted the child. He would not be comforted. Finally in desperation one took him by the hand and led him from the room.

Tryor, his eyes blazing, rose to his feet. Never before had Kennedy seen an angry Martian. He saw one now.

"You frightened child!" he hissed. "Because of you, child grow crooked all his life. Child never forget."

It sounded like a damning indictment. Kennedy's voice was a choked and wretched thing.

"I'm sorry. I was trying to show you the pressure that is on me."

He pointed to the picture he had drawn. "This is *my* child," he said.

Tryor grasped the meaning. Apparently he had not fully understood the meaning of the child in the last picture. Now he saw

it. The rage began to go from his face. And little by little a warm sympathy replaced the anger. Tryor understood!

Kennedy wiped the sweat from his face. He had won a battle. The lines of communication were open at last.

Outside in the night was the sound of a man running and a voice calling, hoarsely, "Kennedy!"

Blount's voice.

Kennedy opened the door.

"Eight men from the ship!" Blount panted. "They jumped us. I think they killed Anders. I got away."

Something had gouged a groove down the side of Blount's face. Blood still flowed from the edges of the cut.

In the darkness a human voice called. Running footsteps sounded. Blount turned a startled head in the direction of the sound.

"They followed me," he whispered.

"Come in this dome," Kennedy said. "Quickly!"

Blount moved but the running footsteps moved faster. From the soft darkness a powerful flashlight juttied a sudden stream of blinding light.

"Stand where you are!" a voice ordered.

"They've got guns," Blount whispered.

"I don't doubt it," Kennedy answered. He turned his head and called within the dome. "Tryor!" There was no answer. The running feet came up the walk.

"Get your hands up!" Guns prodded them. They lifted their hands. Fingers probed their pockets. "They're clean," a voice said.

"Tryor!" Kennedy called again.

"Shut up, you!" A fist smashed against his mouth. "Mr. Doak? Here they are, sir."

"You've got Kennedy?" Doak called from the darkness.

"Got him!"

Kennedy hit the man who had struck him. All the pent-up emotional storm raging in him gave strength to the blow. The man turned a double somersault backward.

"Tryor!" Kennedy called again.

There was no answer. The flashlight poured over him and Blount. Soft clicks sounded in the darkness, safeties being released.

"Stand still, you! If you don't, I'll blow you in two."

Kennedy stood still. Blount stood still. Doak came out of the darkness. Doak seemed pathetically glad to see the field man.

"I almost made a mistake," Doak said.

"Uh!" Kennedy said. "So you finally thought of that?"

"I thought of it," Doak said. He spoke to his men. "Find out what is in this house." There was suspicion in his voice. And fear.

Kennedy knew that Doak had realized that the machines which could create a new subdivision could also create weapons. Doak was afraid of those machines, desperately. But Tryor had said there were no machines and Tryor had failed to answer.

A MAN stepped inside the door of the dome. His voice came back. "Just a bunch of goonies squatting in a circle. That's all." The voice was contemptuous of the Martians.

Then the voice came again. "There's something going on here that I don't understand. Come and look at this, Mr. Doak."

Doak moved forward. Kennedy followed. Doak stepped into the room. Kennedy halted in the doorway.

Tryor and the six Martians were squatting in a circle. The sound of the clamor outside, the pound of Doak's footsteps must have been clear to them, but they did not turn. In the center of the room, like a ball, floated a sphere of blue haze. As Kennedy watched, the haze seemed to thicken and become a darker shade of blue. He felt his pulse leap. The blue haze of the sand movers!

There was no obvious origin of the blue sphere. It appeared to come from nowhere. Something from nothing, he thought. Then his own phrase came back to his mind. "Something tangible to our senses comes from something intangible to them." This was happening here.

The blue haze thickened, became a ball a foot in diameter.

"What is that thing?" Doak said.

The Martians did not answer. Their gaze was concentrated on the ball with a steadiness that nothing seemed capable of penetrating. The ball lifted a foot in the air. It was above the heads of the squatting Martians.

From his pocket, Doak jerked the flat automatic. It spouted three shots at the ball. The blue haze flickered with three tiny points of glistening light.

Doak looked at the ball and then looked beyond it, trying to see where his bullets had struck the wall of the room.

"They went in," he said slowly. "But they didn't come out."

He seemed to be trying to grasp the significance of something that went in but didn't come out. With a slow, almost imperceptible drift, the ball began to move toward him.

"Keep that thing away from me!" he shouted.

The squatting Martians seemed not to hear him. The ball continued to move. The pistol in his hand swung to cover Tryor.

"I'll shoot you!" Doak yelled.

The ball darted toward him. He pulled the trigger of the gun. In the quiet room the roar was thunderous. The bullets went into the ball. Turning, Doak fled through the door.

Like a maddened bull, Doak plunged from the dome. Kennedy got quickly out of his way. Behind Doak, moving far faster than he could move, came the blue ball. After he left the open doorway, it caught him.

He screamed, a sound wrenched from a throat in mortal pain and fear, as the ball touched him, then he was gone.

Gone in a direction that no eye could follow, gone from the space he had occupied to some other space, perhaps gone from something tangible to the senses to something intangible to them.

Kennedy thought he saw coruscating pinpoints of light flare in the outlines of Doak's body, he believed he saw the mouth gulp once, like a frog going hastily and unwillingly under water. Then the frog mouth was gone and Doak was gone and there was nothing in the doorway of Tryor's dome except a floating ball of blue haze.

"Ah!" one of Doak's men gasped. They ran, like crazy men, and they looked back over their shoulders as they ran, to see if the ball was following them. It floated serenely in the doorway. The running footsteps died in the silence of the Martian night.

"Come," Tryor whispered. "Come, friend."

Kennedy went into the dome. The ball preceded him. It took up its position again above the circle of squatting Martians.

"Tryor?" Kennedy said, huskily.

"No talk," Tryor answered. "Listen."

On the Martian's face, the lines of concentration deepened. The seven stared at the ball. There was silence in the room. The silence grew. There was a click, as of a door being unlocked somewhere.

"What is it?" Kennedy whispered. Somewhere a child was crying.

A man was trying to comfort her. The sobs turned into words.

"Where'd the man go?" the child's voice came. "He was here just a minute ago. You're a policeman, aren't you?"

"I'm a policeman," the man's voice said.

"I want my daddy," the child's voice said. "I want my auntie. I want to go home."

**F**ROM Kennedy's throat came wild words. "Joan! Joanie! I'm here, Joan. Are you all right, Joan?"

"Daddy!" the child's voice was a shout of glee. "I'm all right, Daddy. Where are you? I can hear you but I can't see you!"

The gruff voice spoke again. "Now, now, child. Your daddy ain't here. He's on Mars. But I'm here and everything will be all right. Don't you worry none. I'll take care of you." A gruff but soothing voice, it was, a kindly voice, but a startled voice too.

"But my daddy *is* here," the child protested. "I just heard him. Daddy!"

"Go with the policeman, Joanie," Kennedy said in choked tones. "Go with the policeman. I'll be home by the next space ship. Go with him."

"What the devil is that?" the startled policeman gasped. "Who are you? Where are you?"

The blue ball vanished. It went into nothingness, vanished into nowhere. The voice of the policeman was silent.

The squatting Martians relaxed. The concentration disappeared from their faces. Tryor smiled.

"That was my child!" Kennedy whispered. "I heard her." Tryor waved his hand in a little gesture that indicated the spot the blue haze had occupied. "Through that we reach all space," he said.

Kennedy sighed. "I knew you had machines, somewhere," he said. He did not in the least understand how this squatting group had reached the operators of the machines or how they had made their wishes known or how they had translated their wishes into

effective action across even the void of space. But it was not too important to know, now. Later he could learn.

Tryor shook his head. "No machines," he said, smiling. "It is here." He tapped his forehead and groped for words. "A something you have not yet, a piece of tissue, a lobe—" The faltering words went into silence. "Here, through this lobe, we touch all things, change all things. How say? How say?"

The words groped into silence.

"Good grief!" Kennedy whispered. A piece of tissue, a brain lobe, that was the ultimate machine. No spinning generators or grunting atom giants. No wheels, no cogs, no levers. Moving atoms, shifting bits of ultimate matter. The lobe of a brain.

"But how did you develop such a thing?"

Tryor knew the answer. Tryor tried to explain. When in the long ago the clouds had stopped forming and the reservoirs had stopped filling, when the desert had come up over the fat farm lands, when the Martians had faced death and extinction, there had been born a mutation, with the extra lobes.

"We are his sons," Tryor said, smiling. . . .

Outside, in the star-bright Martian night, Kennedy tried to understand what he had learned. In an extra brain lobe, the Martians had found the secret of Paradise.

It was a secret the human race could probably never probe, and almost certainly could never duplicate. A freak, a sport, a mutation. The chances of nature ever duplicating it again were ten times ten high ten—against.

For a moment, he was sad. Then the sadness was gone. He straightened his shoulders. For one race there was one destiny, for another race there was another destiny. What the Martians had received as a gift of the gods, humans would have to achieve with the work of their own calloused hands.

Ahead of him, ahead of all men, were bugles blowing.



Next Issue's Featured Novel of the Future

**FLIGHT INTO YESTERDAY** by CHARLES L. HARNES

# The Loot of Time

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Scaly men were coming out of the strange mechanism

## CHAPTER I

### *The Time Tractor*

**H**UGH CAMERON rose from his knees and dusted his hands. He looked at Jack Cabot and Conrad Yancey and the two of them stared back at him, questioningly.

"We're ready to go," Cameron announced. "I've checked everything."

"You give me the willies," Yancey spoke flatly. "Checking and rechecking."

"Got to make sure," Cameron told him. "Can't take any chances, not on trip like this."

Cabot shoved up his hat and scratched his head.

"Are you sure that the theory and the mechanism are all right, Hugh?" he asked

## Marooned in the Past, a Party of Travelers





## A Hall of Fame Novelet

by **CLIFFORD D. SIMAK**

anxiously. "I still have a feeling we're all crazy."

Cameron nodded. "Near as I can make out, Jack, it will work. I've gone over it step by step. Pascal has something here that's unique. A theory that has no precedent—treating time as something abstract, but using that very basis for time-travel."

"It would take a guy who got kicked out of Oxford for saying Einstein's relativity the-

ory was all haywire, to make something like this," observed Yancey.

Cameron pointed to a crystal globe atop a mass of intricate machinery.

"The whole answer is in that time-brain," he said. "That's the one thing I can't figure out. How he made it I don't know. But it works. I have proof of that. The rest all checks."

"Pascal has taken the position that time is

## **Sends an SOS Ringing Far Into the Future!**

purely subjective. That it has no existence in fact. That it is only a mental concept, but something that is entirely necessary for orientation."

"That's the part I can't get my teeth into," protested Cabot "It seems to me that if a man were going to travel in time, there'd have to be an actual factor. Otherwise it would not obey mechanical rules. There'd be no theater for mechanical operation. In other words, just how are we going to travel through something that doesn't exist?"

CAMERON lit a cigarette and tried to explain. "Your mind sticks on the mechanical part," he said. "Pascal's theory isn't all mechanics or all mathematics, although there's plenty of both. There're a lot of psychological concepts and that's one place where they come in. He figures that even if time is non-existent, even if it has no factual identity, that the human brain has a well-developed time-sense. Time seems entirely natural to us. Viewed from the commonplace point of view, there is absolutely no mystery about it. It is firmly embedded in the human consciousness.

"Pascal figured that if you constructed a mechanical brain you could construct it in such a manner that its time-sense would be enormously magnified. Maybe ten thousand times that of a human mind. Maybe more. There's no way to tell. So Pascal not only constructed the mechanical counterpart of a human brain, but he constructed it with an exaggerated time-sense. That brain over there knows more about time right now than the human race will ever know. Nobody else on Earth could have done it. No Twentieth Century man. Pascal's a wizard. That's what he is."

"Listen, Hugh," said Cabot. "I want to be sure. I sent over to America had you come out to London because I knew that if any man could tell me anything about this pipe-dream it would be you. I want you to feel absolutely certain. I can't understand it myself. I figure you can. If you have any doubt say so now. I don't want to get stuck halfway back in time."

Cameron puffed away at his smoke. "It isn't a pipe-dream, Jack. It's the goods. The time-sense in the brain is developed to a point where it has an ability to assume mastery over time. It can move through time. What's more, it can move the time-tractor through time—with all of us inside the tractor. Not

hypnotism, because in hypnotism you only think you're some place or doing something that isn't so.

"The brain actually can move back and forth in time and it can move us back and forth in time. It develops some sort of a force. Not electricity. Pascal thought it was at first. But it isn't, though it's related to electricity. For want of a better term we might call it a time-force. That describes it well enough. It develops this force in sufficient amount to operate the control mechanism that guides the brain's movement through time."

He flipped his hands helplessly. "That's all I can tell you. The rest of it is mathematics that would be pure Greek to you and mechanics that you'd have to take eight years of college to understand." He looked at Cabot. "You'll have to take my word for it, Jack, that the blamed thing will run."

Cabot smiled. "That's good enough for me, Hugh," he said.

A shadow blotted out the sunlight on the floor.

The three looked toward the door.

Dr. Thomas Pascal stood there, a white-haired man with a face that was almost childish in its simplicity. He was one of 1940's scientific wizards.

"All ready to start?" he asked cheerfully.

Cameron nodded. "Everything seems all right, Doctor," he said. "I've checked every cable, every cog, every contact. They're all in perfect order."

"All right, then," growled Yancey. "What are we waiting for. I'm all set to slaughter me a saber-tooth."

"You'll find plenty of them," Pascal told him. "I told you I'd take you to a virgin game field. A place where a rifle shot had never been fired. That's what I'm going to do."

Cameron laughed. "Doctor," he asked, "how did you ever get the idea of selling these two mad hunters on this proposition? A hunting trip back into time. That's one for the records."

"I needed money to finish the tractor," Pascal told him, "so I cast around for someone who might be interested, but interested in such a way that my invention would not be used for base ends. Then I heard of Mr. Cabot and Mr. Yancey. Plenty of money. Famous hunters. What could be more appealing to them than a hunting trip back into the past? But they weren't easy to convince.

They listened only when I consented to let you check the entire machine."

**A**T THIS, Cabot shook his head stubbornly. "Doctor, you still have to show me those game fields back in the Riss-Wurm interglacial period. It's fifty-thousand years or more back there. A long ways to go."

"You'll eat mammoth steak for dinner tonight," Pascal told him.

"If you're going to make good on that promise," Cameron suggested, "we better get started. All our supplies are stored, the machinery is checked. We're ready."

"All right," agreed Pascal. "Will someone shut the door and make sure the ports are closed?"

Yancey walked to the doorway, reached out to pull the door shut and lock it. For a moment he stood still, staring out over the green hills. There, only a few miles away, lay the village of Aylesford. And beyond lay the valley of the Thames, a country steeped in legend and history. In a few minutes they would be moving back through and beyond the days which had given rise to that legend and history. Two American hunters on the maddest hunting trip the world had ever known.

Yancey closed the door, chuckling. "Wonder how much lead it takes to stop a sabertooth?" he mused.

Turning back to the interior of the great tractor, he saw that the time-brain was glowing greenly. Dr. Pascal, standing before it, seemed like a tiny, misshapen gnome, working before a fiery furnace.

"Door closed and locked," Yancey reported.

"Ports all right," said Cabot.

"Okay," replied Pascal.

Machinery hummed faintly, nothing more than a whisper of a sound. . . .

There was nothing to indicate they had left the present, were moving backward through time, but when Yancey looked through a port, he choked back an exclamation. There was nothing outside the port. Just a blank, flat, gray plane of nothingness, with now and then shadows that flitted and were gone.

Pascal sucked in his breath as the tractor rocked and bumped. The gray outside the port grew less dense. Objects became faintly discernible.

"We're going too fast," Pascal explained. "Ground seems to be raising. Have to take



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it slower. We might hit something. Most things wouldn't stop us, but there's no use taking chances."

"Sure the ground is rising," Cameron told him. "Maybe by this time there isn't any English channel. Back in the Riss-Wurm period the British Isles were connected with the continent. The Thames flowed north through the North Sea basin to reach the North Sea.

The gray outside the ports thinned even more. The tractor rocked like a boat in a gentle swell. Then the grayness turned to white, a dazzling white that blinded Yancey. The tractor moved sharply upward, seemed to be riding a huge wave, then dropped but more slowly.

"We just passed the Wurm glacier," Pascal told them. "We're in the Riss-Wurm now."

"Take it just a little easier," Cameron warned him. "That last bump busted a tube in the field radio. We can fix that, but we may need that radio. We don't want to smash it entirely."

Outside the port now Yancey could make out objects. A tree became clearer, was sharply defined and beyond it Yancey saw solid landscape, bathed in a rising sun.

He heard Pascal's voice.

"Seventy thousand years, approximately," he said. "We should be where we intended to go."

But Yancey was intent on the scene outside. The tractor stood on the top of a high knoll. Below unfolded a panorama of wild beauty. Rolling hills fell away to a wide val-

ley, green with lush grass, while in the distance a stream caught the sunlight of early dawn and glistened like a ribbon of silver. And on the hills and in the valley below, were black dots, feeding game herds, some so close he could make out individual animals. Others were black spots.

Yancey whistled soundlessly. He wheeled from the port. "Jack," he began breathlessly, "there are thousands of herds out there—"

But Cabot, he saw, had already unlocked the door.

**T**HE four of them stood grouped in the doorway and stared out. Pascal smiled. "You see," he reminded them, "that I told you the truth."

Cabot drew in his breath sharply.

"You sure did," he admitted. "I doubt if Africa in its prime was better than this."

"An overlapping of fauna," said Pascal. "The Old Stone Age merging with the modern. One type dying out, another coming in. The most diversified and plentiful game herds that ever existed on the face of the earth before or since. The cave bear, the saber-tooth, the cave-hyena, the mammoth and woolly rhinoceros living coincidentally with vast herds of wild ox, reindeer, Irish elk and other animals of more recent times.

"Some hunting!" said Yancey.

Cabot nodded in agreement. He stepped down from the door onto the ground. "Let's stretch our legs," he suggested.

"Can't right now," said Cameron. "Have to check over the machinery. I want to be sure everything's all right."

Yancey jumped to the ground.

"You fellows had better take your rifles," warned Cameron.

Cabot laughed. "We have our revolvers," he said. "We aren't going far away."

The two hunters walked slowly wondering, away from the tractor. The ground beneath their feet was soft to the tread with thick grass. Head-high thickets spotted the hillsides that sloped away toward the river. On some of the hills reared great, grotesque rock formations. And everywhere was game.

Yancey halted and lifted a pair of binoculars to his eyes. For several minutes he stood studying the landscape. Then he lowered the glasses and slipped the thong from his neck. He handed them to Cabot.

"Take a look, Jack," he invited. "You won't believe it until you see it with your own eyes. There's a herd of mammoths down by

the river. That dark spot just this side of the big groove. And there's another big bunch up the river a bit. I picked up a few woolly rhinos. And bison, something like the old American buffalo."

"Bos bisons," said Cabot. "I read up some on Stone Age animals the last few weeks. Primitive form of bison. Maybe we'll be able to get a few *Bos latifrons*. Big brutes with a horn spread of ten feet. But maybe they're extinct. They're the grandpappies of those fellows out there."

"What's that big bunch across the river?" Yancey asked.

Cabot trained the glasses in the direction of Yancey's pointing finger.

"Irish elk," he pronounced.

A coughing roar brought the two men half-way around. What they saw held them petrified for a moment.

Less than a hundred feet away, at the edge of a thicket, through which he must have come without a sound, stood a massive bear. A huge beast, six feet at the shoulders. He was dark brown in color and he was angry. He rocked gently from side to side and champed his jaws. From his chest rumbled a growl that seemed to shake the earth.

"For Heaven's sake," hissed Cabot, "don't move fast! Edge over toward the tractor easy. That boy is ready to charge!"

Yancey's hand dropped to his gun butt. Out of the tail of his eyes Cabot caught the motion.

"Yancey, you fool," he whispered huskily, "keep your hand away from that. A forty-five slug wouldn't more than tickle him."

Slowly the two men backed away from the bear, back toward the towering gray form of the time-tractor, their eyes never leaving the monstrous beast that stood swaying before them. The bear was working himself into a rage. His chest rumbling was almost continuous now, like a train crossing a long trestle. He snarled and the snarl was a sound of raw fury that sent cold shivers up Cabot's spine.

**C**AUTIOUSLY they paced their slow backward march. Yancey's heel caught in a root and he stumbled, but righted himself quickly. The bear growled thunderously and shook his head. Foam from his drooling jaws flecked the massive brown shoulders.

Then the bear charged. With no apparent

preliminary move he launched into full motion, with the speed of an avalanche.

"Run," shrieked Cabot, but his cry was drowned out by a blasting report. The charging bear lurched forward, struck head and shoulders on the ground and somersaulted.

Cabot, racing toward the time-tractor saw Cameron and Pascal framed in the doorway, heavy elephant guns at their shoulders.

"Wait," roared Cabot. "Make the second shot count!"

In three leaps he was beside the tractor door.

Pascal shoved the gun at him.

"Never shot one before in my life," he told Cabot.

Cabot spun about, gun in hand. The bear was on its feet, swaying heavily from side to side. Its small pig eyes gleamed balefully and red foam flecked its jaws and shoulders.

Deliberately Cabot brought the gun-barrel up, centered the sights squarely between the two eyes and squeezed the trigger. The bear coughed gently and rolled over.

Yancey wiped his brow with the back of his hand. "Closest shave I've had," he confessed.

"Cave bear," said Pascal. "Just one of the big life-forms you will find here."

Cameron stepped down from the tractor. "You'll find out these animals aren't the gunshy brutes you two have been hunting," he stated. "These babies don't fear man. They figure man isn't dangerous, if in fact they've ever seen a man. The Neanderthals that are living somewhere in this country right now are no match for a brute like that."

Yancey wiped his brow again. "This is the strangest place I ever saw," he declared. "Jack and me just step out for a smoke and a look-around. We aren't gone five minutes and a bear jumps us."

Cameron guffawed. "Picked you out for breakfast," he said.

Yancey grimaced, but made no reply.

Suddenly Cabot hunched forward, finger pointing to a patch of tall grass beyond the dead bear.

"There's something in there!" he whispered harshly.

A tawny shape raced from the grass, landed on top of the bear's brown body. With glinting claws and powerful teeth it laid back the hide on the great shoulder. Then, seeing the men, it backed away, its face twisted into a blood stained snarl.

Yancey's .45 leaped out of its holster and exploded almost as it cleared. One explosion blending with another, the gun set up a roll of thunder that beat against the ears of the four men.

Still snarling, the tawny beast jerked to the impact of the heavy slugs. Then it sprawled and tumbled as Yancey's gun clicked on an empty cartridge.

But it was not dead. Snarling and spitting, it regained its feet, slunk low in a deadly slouch, razor-sharp, foot-long fangs bared in a murderous sneer.

Cabot whipped out his revolver as Yancey rapidly clicked new cartridges into the cylinder. Cameron snapped the elephant gun to his shoulder. The rifle bellowed and the cat rolled over. Cabot slid his gun back into the holster.

"Saber-tooth," said Pascal coolly.

"He sure carries lead," Yancey commented, breathing hard.

Cameron cradled the rifle in his arm and stared at the two animals. "Hunting?" he said. "This isn't hunting. This is an eternal Custer's last stand—a continuous battle in self-defense."

"Those critters sure are blood-thirsty," agreed Yancey.

"And," he added, "not afraid of us."

Cameron blew smoke through the gun barrel. "Wonder how cave bear steaks taste," he mused.

Yancey looked the huge animal over.

"Probably tougher than the devil," he said appraisingly.

## CHAPTER II

### *The Centaurians*

**F**ROM the office of Time Travel, Inc., on the 600th story of the Berkley stratosphere building, New York lay stretched below, a fairy city. Under the soft glow of millions of lights it took on an unearthly beauty. It was a city of slender pinnacles of pure white beauty, looping arches of rainbow hues, formal gardens and parks, gleaming towers of argent, black domes.

Steve Clark liked the view. He often came here at night to sit and talk with his friend, Andy Smith, one of the ace pilots of the Time Travel service.

Smith was reading the last edition of the *Daily Rocket*. Steve Clark had brought it in only a moment before, fresh from the press and thrown it on the desk. Smith had it spread in the white circle thrown by the lone light. The rest of the office was in darkness. Beyond the desk lockers, other desks and record files loomed darkly. The time-machines themselves were in an adjoining room, ready for launching from the face of the building.

"How's business?" asked Clark, with his feet fixed firmly on the top of the desk.

Andy Smith grunted.

"Not so good. It's the Fifty-Sixth Century, time-travel isn't a novelty any more and our rates are too high. Didn't have more than a dozen or two trips all week." He jabbed his fingers at the purple headlines. "Times seem to be all right for you newspaper fellows," he said. "Lots of big news this afternoon."

"Yeah," Steve Clark agreed. "The Centaurians again. They're always good for a banner-line any day. Made a real haul this time."

"I should say so," Smith said. "Martian bongo stones, eh? Fourteen of them. Largest and most perfect collection in the entire Solar System."

"That's it," said Clark. "The old man almost busted a blood vessel when that story came in an hour ago. Wanted to scoop the city."

Clark chuckled. "We did," he said.

Andy Smith folded the paper carefully. "Steve," he said, "what are the Centaurians? Nobody seems to know."

"They're super-crooks for one thing," Clark said. "And when you've said that, you've said about all that anyone knows about them for sure. They've laughed at the best brains in the police business for the last five hundred years. And I figure they'll still be laughing five hundred years from now if they live that long and there's no reason to think they won't. Unless they're keeping it a secret, the flatfeet don't even know where their hideout is located. They've made monkeys out of everyone. Didn't they steal a gold shipment out from under the nose of the Interplanetary Police, and keep it, too, in spite of the fact that every IP man in the System was turned loose on the case?"

"You figure then," asked Smith, "that the Centaurians are real? That they are something that isn't human. A super-gang of un-

earthly bandits?"

"You know," Clark replied, "a newspaperman doesn't take to fables very easy. He breaks more myths than any other kind of critter I know. But as a newspaper man, I'm telling you that these Centaurians aren't human. Probably a lot of jobs have been blamed on them that they never had a thing to do with. But there are cases on record of eye-witnesses who saw them. Only two or three such instances in the last five hundred years, but they check up well.

"All agree on vital points. They got tails and they're covered with scales and instead of feet they have hoofs. Whatever they are, they don't go in for penny-ante stuff. When they make a haul, it's one that's worthwhile. Those bongo stones. They were worth ten billion if they were worth a dime. And the shipload of IP gold."

SMITH whistled. "Then you figure they came from Alpha Centauri?" he asked.

"Either Alpha Centauri or some other place outside the System. Nothing like them been found on any of the planets here. I always sort of figured they were fugitives from their own System. Maybe things got too hot for them, wherever they were, and they had to take it on the lam. Whatever they are or wherever they come from they sure have easy pickings here. They walk off with just about whatever they want to and nobody's ever come close to catching up with them."

"I read some place, long time ago, that it is believed they came to Earth in some sort of a crazy space ship. Wrecked when it struck. The ship was smashed up and two or three of its occupants were killed—but I guess they never did find out much about them from that. The ship was all in pieces and the things in it were crushed to pulp. Maybe it was something or somebody else, not the Centaurians at all."

Steve Clark lighted a Venus-weed cigar and puffed.

"Whatever they are," he said, "they make good news copy."

Smith glanced at his watch. "I'll be off in a few minutes," he said. "What say we hop over to Paris and buy us a round of drinks?"

"Sounds all right," agreed Clark.

Smith rose from his chair, stuffing the paper into his pocket. And standing there, beside the desk, he froze in astonishment.

The office door was open and inside it

stood a group of black-shrouded figures that seemed to blend with the darkness. Something gleamed in the light reflected from the polished table-top.

A voice spoke out of the darkness, a voice that spoke the English tongue with slurred accent.

"You will please resume your seat," it suggested.

Smith sat down again and Clark, dropping his feet from the desk, jerked his chair around.

"You also, sir," said the voice.

Clark obeyed. There was some metallic menace in those short, clipped, incredibly accented words which held a definite note of threat.

Slowly, majestically, one of the black-shrouded figures strode forward, leaving his companions by the door. He stopped before the desk, still in the darkness, but better defined now in the reflections from the desk-top. The man wore dark glasses and he was shrouded in a dark cape, the edge of which trailed to the floor, covering his feet. A black cowl, a part of the cape, covered his head and draped over his face, hiding most of his features.

Steve Clark felt the hair crawl at the back of his neck as he studied the visitor.

Smith made his voice pleasant. "Anything I can do for you?" he asked.

"Yes, there is," said the strange black-draped figure and in the faint light Smith saw the quick, smooth flash of white teeth in the shadowed face. He couldn't make out the face. Couldn't see anything, in fact, except the flash of teeth when he spoke and the occasional dull shine of reflected light from the man's eyes.

The teeth flashed again. "I want a time-condenser," he said.

Andy Smith managed to choke back a gasp of astonishment, but his face was blank when he answered:

"We don't sell parts," he said.

"No," said the black-robed one and the single word sounded more like a challenge than a question.

"There is no call for them," Smith explained, "Time-Travel has the only time-machines in existence. They operate under strict governmental supervision. No one else owns a time-machine. Naturally, the only ones who would have use for spare parts would be our own company."

"But you have an extra condenser?"

"Several of them," Smith admitted. "We have need of replacements frequently. It's dangerous to go into time with a faulty condenser."

"I know that," the other replied. "Contrary to what you may believe, there is at least one time machine in existence other than the ones you own. I have one." Something like a chuckle sounded from his lips. "Strangely enough I obtained it from your company. Many years ago. I came here to get a condenser," said the man. The ugly muzzle of some sort of a weapon poked from the folds of his cape. "I can take it by force if need be. I would prefer not to. On the other hand, if you would cooperate, I would be willing to pay."

HE leaned closer to the desk. A hand flashed out of the cape, was visible for only an instant and then disappeared inside the cape again. But the hand had tossed several small round objects on the desk-top objects that seemed to spin in a blaze of color under the lamp-light.

"Bongo stones," said the white teeth. "Not the ones stolen this afternoon. No way to identify them. But bongo stones. Worth a fortune."

Steve Clark stared at the stones, his mind spinning.

Bongo stones! He counted them. Ten of them! In a flash he knew who this visitor was, knew that the myth of the Centaurians was true. For he had glimpsed that hand during the swift instant it had tossed the stones on the desk-top. A scaly hand, like the paw of a reptile. And the clicking of the thing's feet when it walked was like the sound of cloven hoofs.

Through his buzzing mind came the voice. "And now suppose I take a condenser under my arm and walk out. Leaving the stones behind."

Smith hesitated.

The muzzle of the weapon gestured imperiously, impatiently.

"Otherwise," said the cold voice, "I shall kill you, and take the condenser in any event."

Smith rose and walked mechanically to a locker. Steve Clark heard the rasp of a key as his friend opened the door to take out a condenser.

But he still stared at the bongo stones.

Now he knew why the police had never found the Centaurians' hiding place. They

had no hiding place! They were bandits in time! They had the whole scope of space and time for their operations! They could sack the Queen of Sheba's mines one day and the next day move on to snatch treasures out of the remote future, treasures yet undreamed of!

"Clever," he said. "Clever!" Andy Smith was standing beside him looking at the stones. They were alone in the room.

"You gave them the condenser?" Clark asked.

Smith nodded dry-lipped. "There wasn't anything else I could do, Steve."

Clark motioned toward the stones. "What about those, Andy?"

"I was thinking," Smith said. "We couldn't sell them here—or anywhere else. They'd ask us how we got them. They'd lock us up. Probably before they go through with it, they'd prove we stole them and send us to the Moon-mines."

"There's a way," Clark suggested. He nodded toward the hangar where the time-machines were ranged.

Smith wet his lips. "I thought of that," he said. "After all those fellows stole a time-machine from the company once. Probably the company never reported the loss. Afraid of what the government might do."

Silence hung like a breathing menace over the room.

"Those were the Centaurians, weren't they?" Andy Smith asked.

Clark nodded. Then waited.

"The company will throw me out for this," said Smith bitterly. "After ten years of working with them."

Pounding feet sounded in the corridor outside.

Clark's hand shot out and scooped up the stones.

"Can't let anyone find us with these on us," he whispered, huskily. "Let's duck into the hangar."

Swiftly the two leaped through the doorway into the darkened room. Crouched under the wing of one of the time-fliers they saw figures come into the room they had just quitted. Figures in police uniforms.

The police stood stock-still in the center of the room, staring.

"What's going on here?" shouted one of them.

Silence fell more heavily.

"What do you think that fellow meant, telling us he saw some funny looking birds

coming out of here?" one of them asked the other two.

"Let's look in the hangar," one of the policemen said. He leveled a flash and a spear of light cut the deep gloom, just missing the two men crouched under the wing of the time-flier.

Clark felt Smith tugging at him. "We got to get out of here," Smith said in his ear.

Clark nodded in the darkness. And he knew there was only one way to get out of there.

Together they tumbled through the door of the time-flier.

"Here we go," said Smith. "We're criminals now, Steve."

The machine lurched out through the suddenly opened lock.

The time mechanism hummed and two men, one with ten bongo stones in his pocket, fled through time.

## CHAPTER III

### *Anachronic Treasure*

**G** RIMLY old One-Eye was fighting his last battle. His great stone ax lay out of reach, its handle broken, swept from his hand by a blow aimed at him by the mighty cat. His body was mauled and across one shoulder was a deep wound from which a stream of crimson trickled down his hairy chest.

To flee was useless. One-Eye knew that he could not out-distance Saber-Tooth. There was only one thing to do—stand and fight. So with shoulders hunched, with his hands poised and ready for action, with his one eye gleaming balefully, the Neanderthal man faced the cat.

The animal snarled and spat, its tail twitching, crouched for a leap. Its long, curved fangs slashed angrily at the air.

One-Eye had no delusions about what was going to happen. He had killed many saber-tooths in his life. In company with others of his kind, he had faced the charge of the great cave-bear. He had trailed and brought down the mighty mammoth. In his day One-Eye had been a great hunter, an invincible warrior. But now he had reached the end of life. A man's two hands were no weapon against the tooth and claw of a saber-toothed



tiger. One-Eye knew he was going to be killed.

Dry brush crackled back of the cat and the saber-tooth pivoted swiftly at this threat of new danger from the rear. One-Eye straightened and froze in his tracks.

Conrad Yancey, standing at the edge of the brush, slowly raised his rifle.

"I reckon this has gone about far enough," he said. "A man's got to stick by his own kind."

Startled, the great cat's snarls rose into a siren of hate and fear.

Yancey lined the sights on the ugly head and squeezed the trigger. The saber-tooth leaped into the air, screaming in rage and terror. Again the rifle blazed and the cat straightened, reared on its hind legs, fell backward to the ground, coughing great streams of blood. Across the body of the beast One-Eye and Yancey exchanged glances.

"You put up a swell battle," Yancey told the Neanderthal. "I watched you for quite a spell. Glad I was around to help."

Petrified by terror, One-Eye stood stock-still, staring. His nostrils twitched as he sniffed the strange smells which had come with the stranger and his shining spear. The spear, when it spoke in a voice of thunder, had a smell all its own, a smell that stung One-Eye's sensitive nostrils and his throat and made him want to cough.

Yancey took a slow, tentative step toward the Neanderthal. But when the sub-man stirred as if to flee, he stopped short and stood almost breathless.

Yancey saw that the Neanderthal's left eye at some time had been scooped out of his head by the vicious blow of a cruelly taloned paw. Deep scratches and a tortuous malformation of the region about the cheek-bone told a story of some terrible battle of the wilderness.

Short of stature and slightly stooping of posture, the Neanderthal was a model of awkward power. His head was thrust forward at an angle between his shoulders. His neck was thick as a tree boll. The long arms hung almost to the knees of the bowed legs and the body was completely covered with hair. The heavy bristle of hair on his enormously projecting eyebrows was snowy white and throughout the heavy coat of hair which covered the man were other streaks and sprinklings of gray and white.

"An old buck," said Yancey, half to him-

self. "Slowing down. Some day he won't move fast enough and a cat will have him."

CONRAD YANCEY took another slow step forward and this time the Neanderthal, bristling with terror, wheeled about with a strange, strangled cry of fear and ran, shuffling awkwardly, down the hill to plunge straight into a dense thicket.

Back at the time-tractor camp Yancey told the story of the battle between the caveman and the cat, of how he watched and had finally stepped in to save the man's life.

But the others had stories, too. Cabot and Cameron, hunting together a few miles to the east, had been charged by an angry mammoth bull, had stopped him only after they had placed four well aimed heavy-caliber bullets into him. Pascal, remaining at the tractor, had scared off a cave bear and reported that a pack of five vicious, slinking wolves had patrolled the camp throughout the afternoon. He had shot two of them and then the rest had scattered.

For here was a land that was teeming with game; a land where the law of claw and fang ruled and was the only law; where big animals preyed on smaller animals and in turn were preyed upon by still bigger ones. Here was a land without human habitation, with the few Neanderthals who did live here hiding in dark, dank caves. Here was a land that had no human tenets, no softening hand of civilization.

But here, in this primeval wilderness of what later was to become the British Isles, was the greatest hunting ground Cabot and Yancey had ever seen. They shot in self-defense as often as they shot to bring down marked game. They found that a cave bear would carry more lead than an elephant, that the saber-tooth was not so hard to kill as might be thought, that only superb marksmanship and the heaviest bullets would bring the mammoth to his knees.

The flickering campfire, lighting up the gray, shadowy bulk of the time-tractor, was the only evidence of civilized life upon the darkening world as a blood-red moon climbed over the eastern horizon and lighted a land that growled and snarled, shivered and whimpered, hunted and was hunted.

Yancey saw One-Eye lurking on the edge of the camp when he arose in the morning. He had just a glimpse of the old fellow, squatting in a clump of bushes, looking over the camp with his one good eye. He disap-

peared so quickly, so soundlessly that Yancey blinked and rubbed his eyes, hardly believing he had left.

In the field that day Yancey and Cabot caught sight of him several times, lurking in their wake, spying upon them.

"Maybe," Cabot suggested, "he is trying to get up enough courage to thank you for saving his life."

Yancey grunted.

"I had to do that, Jack," he said. "He isn't more than an animal, but he's still a man. We got to play along with our own kind in a place like this. He was such a brave old cuss. Standing there, ready to go to bat with that cat with his bare hands."

Back at the camp, Pascal looked at it in a scientific light. "Just natural curiosity," he said. "The first glimmering of intelligence. Trying to figure things out. With what limited brain power he had the old fellow is doing some heavy thinking right now."

"Maybe he recognizes you as one of his descendants. Great-grandson to the hundredth generation, maybe," Cameron jibed at Yancey.

"The Neanderthal race is not the ancestor of man," Pascal protested. "They died out or were killed off by the Cro-Magnons, who'll be moving in within another ten or twenty thousand years. The Neanderthals were just a sort of blind alley. An experiment that didn't go quite right."

"Seems human, though," protested Yancey.

ONE-EYE became a camp fixture. He lurked around the tractor, trailed Yancey when he went afield. Degree by degree he became bolder. Meat was left where he could find it and he carried it off into the brush. Later he didn't bother to drag it off. In plain view of the hunters he squatted on his haunches, ripping and rending it, snarling softly, gulping great, bloody mouthfuls of raw flesh.

He haunted the campfire like a dog, apparently pleased with the easy living he had found. He came farther away from the encircling brush, squatted and jabbered just outside the circle of firelight, waiting for the bits of food tossed to him.

At last, seemingly convinced he had nothing to fear from these strange creatures, he joined the campfire circle, saw with the men, blinking at the campfire, jabbering away excitedly.

"Maybe he has a language," said Pascal,

"but if he has it's very primitive. Not more than a dozen words at most."

He liked to have his back scratched, grunting like a contented hog. He begged for cubes of sugar.

"Makes a nice pet," Cameron declared.

But Yancey shook his head. "Something more than a pet. Hugh," he said.

For between Yancey and the old Neanderthal something akin to comradeship had developed. It was by Yancey that the old one-eyed savage sat when he came into the ring of firelight. It was at Yancey that he directed his chatter. During the day he haunted Yancey's footsteps like a shadow, at times coming out openly to join him, ambling along with his awkward gait.

One night Yancey gave him a knife, half wondering if One-Eye would know what it was. But One-Eye recognized in this wondrous piece of polished metal something akin to the fist ax that he and his people used to flay the pelts from the animals they killed.

Turning the knife over and over, One-Eye slobbered in delirious glee. He jabbered excitedly at Yancey, clawed at the man's shoulder with caressing paw. Then he leaped from his place by the camp-fire and slithered away into the darkness. Not so much as a breaking twig heralded his plunge into the night.

Yancey rubbed his eyes. "I wonder what the damn old fool is up to now?" he asked.

"Went off to try his new knife," suggested Cabot. "Something like that calls for a little throat-slitting."

Yancey listened to the moaning of a saber-tooth in the brush only a short distance away, heard the bellow of a mammoth down by the river.

He shook his head dolefully. "I sure hope he watches his step," he said. "He's slowing up. Getting old. That saber-tooth out there might get him."

But in fifteen minutes One-Eye was back again. He waddled into the circle of firelight so silently that the men did not hear his approach.

Looking over his shoulder, Yancey saw him standing back of him. One-Eye was holding out a clenched fist, but within the fist was something that glinted in the flare of the campfire.

Pascal caught his breath. "He's brought you something," he told Yancey. "Something in exchange for the knife. I would never have believed it. The barter principle."

Yancey rose and held out his hand. One-Eye dropped the shiny thing into it. Living flame lanced from it, striking Yancey's eyeballs.

It was a stone. Yancey rotated it slowly with his fingers and saw that within its center dwelt a heart of icy blue flame, while from its many facets swarmed arcing colors of breath-taking beauty. Cabot was at his elbow, staring.

"What is it, Yancey?" he gasped.

Yancey almost sobbed.

"It's a diamond," he said. "A diamond as big as my fist!"

"But it's cut," protested Cabot. "That's not a stone out of the rough. A master jeweler cut that stone!"

Yancey nodded. "Just what would a cut diamond be doing in the old Stone Age?" he asked.

## CHAPTER IV

### *The Broadcast in Time*

ONE-EYE pointed down into the throat of a cave and jabbered violently at Yancey. The hunter patted the hoary shoulders and One-Eye danced with glee.

"This must be it," Yancey said.

"I hope so," said Cameron. "It's taken plenty of time to make him understand what we wanted. I still can't understand how we did it."

Cabot wagged his head. "I can't understand any of it," he confessed. "A Neanderthaler lugging around cut diamonds. Diamonds as big as a man's fist."

"Well, let's go down and see for ourselves," suggested Yancey.

One-Eye led the way down the steep, slippery mouth of the cave and into a dimly lit cavern, filled with a sort of half-light that filtered in from the mouth of the cave on the ground above.

Cabot switched on a flashlight and cried out excitedly.

In cascading piles upon the floor of the cavern, stacked high against its rocky sides, were piles of jewels that flashed and glittered, scintillating in the beams of the torch.

"This is it!" yelled Cameron.

Pascal, down on his knees in front of a pile of jewels, dipped his hands into them,

lifted a fistful and let them trickle back. They filled the cavern with little murmurings as they fell.

Cabot swept the cave with the light. They saw piles of jewels; neat stacks of gold ingots, apparently freshly smelted; bars of silver-white iridium; of argent platinum; chests of hammered bronze and copper; buckskin bags spilling native golden nuggets.

Yancey reached out a hand and leaned weakly against the wall.

"My gosh," he stammered. "The price of empires!"

"But," said Pascal slowly, calmly, although his face, as Cabot's torch suddenly lighted it was twisted in an agony of disbelief, "how did this all come here? This is a primitive world. The art of the goldsmith and the jewel-cutter is unknown here."

Cameron's voice cut coolly out of the darkness.

"There must be an explanation. Some reason. Some previous civilization. A treasure cache of that civilization."

"No," Pascal told him, "not that. Look at those gold bars. New. Freshly smelted. No sign of age. And platinum—that's a comparatively recent discovery. Iridium even more recent."

Cabot's voice held an edge of steel command.

"We can argue about how it got here after we have stowed it away," he said. "Pascal, you and Hugh go down, and bring up the tractor. Yancey and I will start carrying this stuff up to the surface right away."

Yancey toiled up the throat of the cave. Reaching the surface he slid the sack of jewels from his shoulder and wiped his brow.

"Tough work," he told Cameron.

Cameron nodded. "But it's almost over now," he comforted. "Just a few more hours and we'll have the last of the stuff in the tractor. Then we get out of here."

Yancey nodded. "I don't feel too safe," he admitted. "Somebody hid all this junk in the cave. How they did it, I don't have the faintest idea. But I have a queer feeling it wouldn't go easy with us if they caught us."

Pascal staggered out of the cave and slid a gold bar from his shoulder. He mopped his brow with a shirt sleeve.

"I'm going down to the tractor and get a drink of water before I pack that a foot farther," he announced.

Yancey stooped to pick up his gunny sack. Pascal's scream echoed.

**T**HE hillside below the tractor before had been empty of everything except a few scattered boulders and trees. Now a machine rested there, a grotesque machine of black metal, streamlined with stubby wings, suggestive of a plane. As Yancey caught his first sight of it, it was indistinct, blurred, as if he saw it through a shimmering haze. Then it became clear, sharp-cut.

Like a slap in the face came the knowledge that here was the answer to those vague fears he had felt. Here must be the owners of the treasure cache.

His hand slapped down to his thigh and his gun whispered out of its holster.

A door in the strange machine snapped open and out of it stepped a man—but hardly a man. The creature sported a long tail, and it was covered with scales. Twin horns, three inches or so in height, sprouted from its forehead. The newcomer carried something that looked like a gun in his hand, but no gun such as Yancey had ever seen. He saw the weapon tilt up toward him and his .45 exploded in his fist. Even as flame blossomed from his gun, he saw a .45 come up in Cameron's hand, in the second after the blast of his own gun, then heard the deadly click of a cocking hammer.

The first of the scaly men was down. But others were tumbling out of the strange mechanism.

Cameron's gun barked and once again Yancey felt the comforting kick of the .45 against the heel of his palm, hardly knowing he had squeezed the trigger.

From one of the guns carried by the scaly men whipped out a pencil of purple flame. Yancey felt its hot breath clip past his cheek. Before the time-tractor lay Pascal, stretched out, inert, like an empty sack. Over him stood Cabot, gun flaming. Another one of those purple flames reached out, hit a boulder beside Yancey. The boulder glowed with sudden heat, started to chip and crack.

With mighty leaps, Yancy skidded down the slope, landing in a crouch beside Pascal. He grasped the old scientist by the shoulder and lifted him. As he straightened he glanced at the strange machine in which the scaly men had come. Through the open door he could see a mass of machinery, with banks of glowing tubes.

Then the machinery erupted in a thunder-

ous explosion. The roar seemed to blot out the world. For one split second he glanced up and saw on Cabot's face a baleful grin of triumph, knew that he had fired a shot which had wrecked the scaly men's machine.

The ground seemed to be weaving under Yancey's feet. With superhuman effort he plodded toward the door of the time-tractor dragging Pascal. Hands reached out to help him, hauling him inside.

Slowly his brain cleared. He was sitting on the floor of the tractor. Beside him lay Pascal and he saw now that the scientist was dead. His chest had been burned away by one of the pencils of purple flame.

Cabot swung down on the door-locking mechanism and stepped back into the room.

"What are they, Jack?" Yancey asked, his mind still fuzzy.

Cabot shook his head wearily.

"Don't you recognize them?" asked Cameron. "Horns, hoofs, tails. Today we've seen the devil in person. Those are the people who gave rise to the ancient legend of the devil."

Yancey got to his feet and looked down at Pascal. "Feel bad about that," he whispered. "He was a regular guy."

Cameron nodded, stiff-lipped. From a port Cabot spoke: "Those devil-men are up to something," he announced. "They'll make it hot for us now."

He wheeled on Cameron.

"Can you get us out of here, Hugh?"

Cameron considered the question.

"Probably could," he said, "but I would rather not try it right now. I think we're safe here for a little while. That time brain is a tricky outfit. Know its principle and given time I could figure it out so I could take a try at it. If worse comes to worse I'll do it. Take a chance."

**H**E WALKED to the time-brain apparatus and snapped the switch. The brain glowed with a weird green light.

"That must be a time-machine out there," said Yancey. "Another machine would explain the treasure cache. I'll bet those birds are robbing stuff through time and bringing it back here to cache it. Clever."

"And they landed up ahead to cache some stuff and found some of it missing. Then they came back through time to find out what was wrong," supplied Cabot.

Cameron smote his thigh. "Listen," he said. "If that's right it means time-travel

is well established up ahead in the future. We might be able to reach help there. Those fellows out there must be outlaws. If so, we'd rate some help."

"But how will we reach the future?" demanded Cabot. "How will they know we need help?"

"It's just a chance," said Cameron. "A bare chance. If it doesn't work I can always try to get us back to the Twentieth Century, although the chances are nine out of ten I'll kill all of us trying it."

"But how?" persisted Cabot.

"Pascal said the 'time force' or whatever the brain generates, is similar to electricity. But with differences. It is important just what those differences are. I don't know, not enough anyhow. The time mechanism is run by the force generated by the brain, but we have regular electricity for the tractor operation."

Cameron pondered.

"I wonder," he mused, "if the time force would be sufficiently like electricity to operate the radio?"

"What difference would that make?" snapped Yancey.

"Maybe we could broadcast in time," Cameron suggested.

"But that brain generates very little power," protested Yancey.

"We might not need much power," Cameron told him. "It's just a blind shot in the dark. A gamble—"

"Sounds plausible," Yancey asserted. "Let's take a long shot."

Cameron switched off the brain mechanism and with lengths of wire connected the radio to the mechanism. Then he switched the brain back on again. The sending set hummed with power.

"Better start gambling," said Cabot. "Those boys out there are beginning to ray us. Playing that purple flame on the tractor."

Cameron's voice boomed out, speaking into the microphone.

"SOS . . . SOS . . . Party of time travelers stranded in the Thames valley, near the village of Aylesford, approximately seventy thousand years before the Twentieth Century. Attacked by beings resembling the devils of mythology. SOS . . . SOS . . . Party of time travelers stranded in the Thames valley—"

Cameron's voice boomed on and on.

Yancey and Cabot stared out of the ports.

The devil-men were ringed around the tractor, playing the purple beams on the machine. They stood stolidly, like statues, without a trace of emotion in their features.

The tractor was beginning to heat up. The air was becoming hot and the metal was warm to the touch.

The interior of the tractor suddenly flashed with a green burst of flame.

Yancey and Cabot wheeled about.

The brain mechanism was a mass of twisted wreckage.

"Blew up," said Cabot. "Something in the purple rays. This is the end of us now if our time-casting didn't work. We can't even operate the time-mechanism without the brain."

"Look here!" cried Cabot from a port.

Cameron and Yancey rushed to his side.

Swooping down toward the tractor was a black ship, an exact duplicate of the time machine of the devil-men.

Like an avenging meteor the black craft tore downward. From its nose flashes of green fire stabbed out viciously and living lightning bolts crashed among the devil-men.

Terrified, the devil-men tried to scurry out of reach, but the lightning bolts sought them out, caught them, burned them into cinders.

"A ship out of the future!" gasped Yancey. "Our radio worked!"

## CHAPTER V

### *The Thrill-Hunters*

ANDY SMITH spoke earnestly. "There's just one thing," he said. "We can't go back to the Fifty-Sixth Century. Steve and I stole this time-machine. Lucky for you fellows we did, because apparently no one else caught your radio message. But if we're caught back there, it means a life stretch on Mercury for us. Our machine is the second one ever stolen. The first one is over there."

He nodded toward the devil-men's machine, blasted on the hillside.

"Well," said Yancey, "what are we blabbering around about? We have a machine that will take us through time and space. Any place we want to go. There's plenty of room for all of us. The ship's loaded

with treasure. Do we have to decide where to go? Why can't we just shop around and stop wherever things look good to us? Like those Centaureans. Me, I don't care whether I ever go back to the Twentieth Century. I didn't leave anybody back there."

"Just an old maid aunt," Cabot spoke for himself. "And she didn't approve of me. Figured I should have settled down and made more money—added to the family fortune. Thought hunting was silly."

The four of them looked at Cameron. He grinned. "I'd like to find out something about what the next couple, three hundred thousand years have done in the way of science," he admitted. "Maybe we could pick up a few tricks. Skim the cream of the world's science. Probably lots of ideas we could incorporate in the time-flier."

"Wish we knew more about that time-brain," mourned Smith. "But I can't understand it. The Fifty-Sixth hasn't anything like it. Our machines are run on an entirely different basis. Warping of world lines principle."

They sat in silence for a moment. From the river came the roaring bellow of a mammoth bull.

"Say," asked Yancey, "has anyone seen anything of One-Eye?"

"No," said Cameron. "He must have hit for high timber when all the fireworks broke out."

"By the way," asked Steve Clark, "what are you going to do with Pascal's body?"

"Leave it here," suggested Yancey, "In the tractor. If we worked a million years we couldn't erect a more suitable burial site. Shut the door and leave him there. With his time brain. No one else will ever build another. It was all in Pascal's head. No notes, nothing. Just his brain. He told me he meant to write a book when he got around to it. We can't take the body back to the Twentieth Century and deliver it to the authorities. Because nobody would believe us. They'd throw us in the can."

"We might take it back and leave it somewhere on his premises for someone to find," Cabot suggested.

Yancey shook his head. "That would be senseless. Just stir up a lot of fuss. An autopsy and an inquest and Scotland Yard half nuts over a new mystery. Pascal would rather be left here."

"I'm inclined to agree," said Cameron.

"That's settled then," said Smith getting

to his feet. "What do you say we get started? We got lots of places to go."

Clark laughed. "You know," he said, sweeping a hand toward the wrecked time-flier. "I get a big kick out of the way this Centaurian business turned out. For five hundred years those long-tailed gangsters just toured all over, robbing everything that looked like it was worth taking. Dragging it back into prehistoric time and hiding it away. And in the end all their work was done so that five Earthmen could use it to finance a life-time of time wandering."

Andy Smith looked thoughtful.

"But," he said, "the Centaureans must have been robbing for some purpose. They must have had something in mind. They amassed billions of dollars in treasure. For what reason? Not just for the love of it, surely. Not just to look at. Not just for the thrill of taking it. What were they going to do with it?"

"There," said Cameron, "is one question that will never be answered." . . .

**LD ONE-EYE** squatted inside the time-tractor.

It was snowing outside, but the tractor provided an excellent shelter and One-Eye was well wrapped in furs and skins. In one corner of the tractor was plenty of food.

Wrapped to his ears in a great mastodon robe, One-Eye nodded sleepily. Life was pleasant for the old Neanderthaler. Pleasant and easy. For the tribe which had wandered into the valley and found him living in the shining cave had taken him for a god. As a result they brought him food and furs, weapons and other offerings, gifts to appease his wrath, to court his favor. For who could doubt that anyone but a god would live in a cave that glistened in the sunshine, a cave made of hard, smooth stone, beautifully shaped, a cave that had no draughts and was secure against the attack of any wild beast.

One-Eye, dozing, dimly remembered the day when, curiously and idly jiggling at the door handle of the tractor, the handle moved in his hand and the door had swung smoothly open.

Henceforward the tractor had become One-Eye's cave. In it he had lived through many summers and many snows. In it he would live out the rest of his day.

One-Eye remembered the strange friends who had come to him in this shining cave. They had gone, long ago. And One-Eye missed them. Vaguely he was lonesome for

them. Many times he wished they might come back again.

The old Neanderthaler drew in his breath with a slobbering sigh. Perhaps some day they would. In the meantime, he kept a close and jealous guard and maintained the proper respect to the one of them that had stayed behind, the one whose bones lay neatly arranged in one corner of the tractor.

But they had remembered One-Eye before they left these other friends of his. Of that One-Eye was sure.

Had they not left behind them, in the tractor, for him to find, the great shining stone which he had given them so long ago in exchange for the shining knife?

One-Eye slobbered pleasurably now as he looked at the stone, sparkling and flashing

with hidden fire as it lay in the palm of his hand. One-Eye could not know that the stone had been left in the tractor accidentally, overlooked by the 20th and 56th century men before they left on their excursion into time. Not knowing this, One-Eye held close to him the thought that these friends of his had left behind a token—a token that some day, perhaps, they would return and sit around a fire with him and give him bones to gnaw and scratch his back where it itched the most.

Outside the wind howled dismally and the snow slanted down in a new fury. A blizzard raged over the Thames valley.

But One-Eye, snug in his furs, comfortable in his old age, a god to his contemporaries, played with a diamond the size of a man's fist, unmindful of the weather.



## *Tyranny and Test Tubes*

TO MOST of us science is a profession carried on by cool detached men who seek the facts unswayed by ideologies or religious prejudice. Even questions of good or evil, of freedom versus dictatorship, are excluded, so we believe, from the laboratory.

When we hear that a scientific dispute among Russian biologists over the old problem of heredity versus environment was liquidated by the intervention of the Russian Communist Party, we are shocked. We are told that the heredity exponents were forced to recant and then dismissed from office and all means of livelihood simply because their theories did not fit the "party line."

This bit of news from behind the iron curtain shows that the spirit of free inquiry on which science is based cannot exist without political freedom. The same thing happened in Nazi Germany when the theory of relativity was forbidden because Einstein's religion was "wrong." When the validity of scientific findings are judged by a man's face, religion or politics, real science is dead.

Dr. Edmund W. Sinnott, president of the American Association for the Advancement of Science, in connection with the Association's centennial program during September, 1948, minced no words on this vital theme:

"Science is universal," he declared. "It recognizes no national boundaries, is limited by no racial prejudices, follows no dogma. Whether a discovery in science is made by an Englishman, a Russian or a Japanese is not important. All that matters is the soundness of the work itself. When a scientific paper is published no one asks if it were written by a Negro, a Roman Catholic, a Jew or a Seventh Day Adventist. The paper is judged by what it is, not by who did the research which it reports. Good scientific work is being done by Republicans, Democrats and Communists. In a perilously divided world, this free spirit can be of greatest service to mankind."

—Rex Sherrick

# the magnificent failure

*History calls Jonathan Bates  
the Father of Exploration—but does  
not reveal the true record of his  
first trips to Mars and Venus!*







by **RENE LAFAYETTE**

**N**O HISTORY of the men who gave us the stars could help but begin with that heroic and colorful figure, Jonathan Bates. He has been variously termed, in our learned and ancient times, the "Father of Exploration," the "Giant of Space," and "that sum of all man's courage and daring (to quote), the magnificent Jonathan Bates."

To gaze back from this far distant time upon the massive individual in the very dawn of space navigation, is to achieve, at best, distortion. Records have been so perverted and historians have been so unusually dull, that practically nothing of Bates is known today except hackneyed adjectives. But in the archives of the Terra Record Society, unused and almost unknown data, preserved with all the cunning of a Vega embalmer, lies ready to hand if one wishes to dare those countless leagues of battered and forgotten files.

Sealed up by a now unlisted "commission" of a "Federal Government" and marked **TOP SECRET** (for reasons no one will ever know) is the complete and actual case file, the newspaper clippings, the texts and even the personal letters of Jonathan Bates.

That such an astonishing mine exists and has always existed since that time without being used or even ordered, is probably attributable to a five hundred year "prohibition of issue for use" on all records pertaining to atomic research.

This veil was drawn down in the mid-Twentieth Century and for reasons of state or personalities or graft or sheer bureaucracy, much vital data lay mouldering while men spent their lives for lack of it. When it was at last available, certain fables and stories had become too well established to be refuted.

It may come as blasphemy, then, that Jonathan Bates was, in his own generation,

**The second in a series on  
the Conquest of Space**

considered a very ordinary and even insignificant mortal whose only claim to grandeur was a "crazy hallucination" that space flight was possible. And it is further of much interest to note that Jonathan Bates considered himself, at life's end, a total failure.

Far from a giant, Bates was about five feet three inches tall and twisted as well. The only giant thing about him was his head, and the size of this was exaggerated by his bushy black hair which was difficult for him to control. His eyes had the hot glare of the fanatic and as he lurched along the street, walking poorly because of a twisted spine and a lame foot. His glance would scorch his tormentors, the street urchins who cried "Crazy man, crazy man, fly to the Moon!" and threw chunks of dirt at him.

Jonathan Bates was a rebel and a visionary and such have very short shrift at the hands of mankind, no matter how desperately these be needed in the race.

**I**NJURED at birth in a vehicle accident (oddly common in those barbaric times) he spent a most miserable and lonely childhood, parentless and penniless, and there was nothing in his early experience but to inform him that men's hands were against him and that this race can be bitterly calloused.

An inauspicious beginning for the "Father of Exploration," it is true. For here lay the cruelty of it: there was no one to tell him, toiling and struggling toward his goal, that he would be remembered for hundreds of millenniums as a great benefactor of Mankind.

Mankind never deserved less or was given more by any man. But he was long dead before they knew and Jonathan Bates never did know.

At school he was not considered bright or other than usual. The man who was to invent the fundamentals of space navigation failed three times in arithmetic and, to the end of his days was cursed by strange persuasions regarding multiplication and addition.

When they built the statue of him on Mars (building him very straight and tall, of visionary grandeur) the plaque was supposed to carry an exact facsimile of his original discovery document; but it was thought best to change first the spelling and then the wording, for it would never do for children

to think that the example of all virtue was actually an unlettered man in a most literal sense.

A strong and angry man was Jonathan Bates. Too violent and far too caustic for his mentors, his education was abbreviated in his second year at the university as "an unlikely student," and he was left to his own cherished conceptions of the character of matter and the aspect of living.

Handicapped and fettered by his physical deformity, never completely out of pain, he became a lone hunter who is a stranger to his village hearth.

He came, one day in late May before the Century's end, to the naval proving ground of the Federal Government of North America bearing under his arm a something wrapped in a dirty gunnysack and demanding from a guard to be admitted to the presence of the commanding officer.

Bristling, bushy hair, hot eyes and twisted body gave the sentry pause. But he said, "The C.O.'s busy, sir."

"Young man," cried Jonathan, "I have not walked through fifteen miles of heavy desert sand to be told a lie." And he stood so near, young Jonathan Bates, that the sentry fell back despite himself before those eyes.

"You can't pass this gate!"

"I'll pass it legally or otherwise. Tell your commanding officer that I must see him and instantly, on a matter of very great importance to the country."

The commanding officer was busy but the aide, skilled in handling the unwanted, saw Bates in the ante room. The aide was very smooth and quite accomplished and who knows but what he might have succeeded in changing history by ordering Bates away.

But Jonathan had an instinct which told him that the commanding officer was not occupied and he brushed on through before he could be stopped and came to a halt, leaning at a frightening angle, before the huge desk which was the rampart and *cheval-de-frise* of the admiral.

"I am Jonathan Bates," he said, shaking off the aide. "I have here," and he laid the package on the desk, "a jet motor which will burn chemical or atomic fuels and with which it will be possible successfully to navigate space."

The admiral hastily got the package off his desk before it could mar the mahogany. And then, benign, he said, "I am afraid this

will have to be taken up with the department. I have no authority—”

“You are here trying to make a motor which will not fail in space flight,” said Jonathan. “I have this motor in my hands.”

Dramatically he opened the package and they were amused to see what they took to be a collection of odds and ends left over from some plumbing job.

“You will have to talk with my engineers,” said the admiral, anxious about the grease getting on the rug. “Rutherford, see that this young man gets to talk with an engineer.”

With that Jonathan had to content himself and he lurched after the aide into the cellar full of drawing tables. This cellar served as a drafting room for the proving grounds.

**W**HAT Jonathan said to the disinterested engineers is of no importance. With increasing exasperation he told them he wanted them to build the full scale motor of his small model and he considered that it would be worth their while since he wanted nothing for his plans.

Tolerantly, they heard him out and took some notes which they later destroyed and were, in short, extremely unsatisfactory.

“Too imaginary, too visionary,” said one of the engineers. “But I will consider it and write you a letter.”

That was as far as Bates could get. He said nothing of two years' work all night and every night on this model, he said nothing of hitch-hiking half across the continent. He raised his proud head and trusted they would all dine with the Devil soon. He turned and lurched into an old man who had followed him down from the C.O.'s office.

The ancient one steadied Bates and offered an arm which was resentfully refused. But the man followed to the gate. There, Jonathan looked squarely at him, saw a soft, wistful face, delicate hands and clothing, plain but expensive. Riches were part of the phobias of Bates and he would have gone with no good-by if the old man had not spoken.

“Sir,” he said, “would it cost very much to build this motor?”

“Twenty thousand dollars more than I have, which is nothing,” said Bates. And he shook a massive fist at the sky overhead. “Won't I ever get to you?” he cried.

The mild old man said softly, “I am Lauson Conner, of Detroit Motors. It occurs

to me that we spend more than that on advertising every ten days.”

“I suppose you do,” said Jonathan bitterly, “and I've seen a millionaire's yacht, the cost of which would have given man the entire Solar System. But what has this to do with me?”

“It occurs to me,” said Conner, just a hint of slyness in his eyes, “that our motor company might be willing to finance you.”

Jonathan was raised in a rugged school. “Why?”

“Well, perhaps— Tell me. Why do you want to go into outer space?”

Jonathan bit down on his reply for he knew better than to expose his dreams. “Of what value would this motor be to you? I would not sell it for unscrupulous use.”

Lauson Conner smiled quietly. “Why, we've a company motto, ‘A Motor for Everything’ and we've not yet built a space motor. I am the advertising executive and I think that I may be able to provide you with the funds. You see, I came here today to get permission to use the Navy intallation of our equipment in a full page ad and—well, I failed because of security. Recently our company was scolded by the Government for being anti-trust. It could use some favorable publicity as a Benefactor of Mankind. If you are not unwilling to be talked about in the prints, I think I can place an excellent laboratory and our finest technicians at your service.”

Jonathan followed him but poorly until his final statement. He threw it all into the winds of chance and extended his hand.

They shook and climbed into Lauson Conner's car.

No more ill-starred approach to space travel could have been conceived. For, as summer began, Jonathan Bates had already learned that advertising men were sometimes as prone to exaggeration in advertising.

In a sweltering hot outhouse at the extreme rear of the Detroit Motors grounds, there was set up a photographic laboratory in the best motion picture, horror story tradition, complete with electrodes. And when the pictures were taken and Jonathan Bates could remove his white coat for real work, the carpenters and electricians came and took the equipment away.

Jonathan stormed and bullied but mild Lauson Conner had fine answers for everything and took no action whatever. Wasn't

Bates on the payroll at \$500 a month? Didn't he have a workshop? What need was there for all sorts of equipment? And besides, why should Jonathan be so wild about it? There were plenty of men who would be glad to draw their pay and do no work.

"But confound it!" cried Jonathan, banging the desk until the inkwell geysered, "I tell you I've got to get to the Moon and Mars!"

This interested Conner. "Mars? Ah!" And he scribbled for a while and called in one of the nine vice-presidents he commanded to give him orders pertaining to a new display in a national weekly.

"And see to it," he added, "that they give us staff coverage on this as well. Mr. Bates, we'll need a few more photographs."

**T**HROUGHOUT July Jonathan moped about the outhouse, turning over discarded engine parts with his toe, doing nothing but mourn. And then the first articles appeared.

Detroit Motors, who could make anything, were altruistically engaged in creating a rocket engine—in their own laboratories, under the direction of Dr. Jonathan Bates the eminent physicist and mechanical engineer.

Jonathan stormed at this misrepresentation. But he was too busy answering the phone and replying to letters to give Detroit Motors the full broadside of his mind.

Strangely, the Government did not object. In fact nobody objected. And the news story was built up and passed around and lost nothing in the reprinting across the land. It came to a final fact that any day now, Dr. Jonathan Bates would take off in a "rocket engine" for Mars. People began to stand outside the wire fence of Detroit Motors and stare hopefully at every motion within, explaining one to another that it was this or that function of the "rocket engine."

A millionaire in Oklahoma offered a \$50,000 prize for the first man to fly to Mars. A missionary society sent a thousand pounds of leaflets to be distributed amongst the heathen there. In the stores women's hats were displayed as "Martian" and it went into the language as a shade of red. And, as the Detroit Motors publicity campaign really began to roll, the staid post office department of the Federal Government began to accept "covers" for philatelists to the number of thousands.

Angry, violent Jonathan Bates tried to stem the stampede. But it was getting Detroit Motors on every tongue and people were learning that it should be coupled with "Benefactor to Humanity" and "forward advance of civilization" and the Supreme Court was soon to review the anti-trust charges in which the firm was involved. Stop the publicity? Never! And Bates cried out in vain.

The only thing which gave him hope was the infrequent use of his own name. It was all "Detroit Motors" and "Detroit Scientists" and almost never "Jonathan Bates."

He sat one day in his hut examining the strewn magazines and papers which publicity had sent down. There were paintings of Mars and fanciful suppositions about Mars and a rehash of everything that people had thought about Mars and a dozen learned men stating various contradictory things about Mars and through it all ran Detroit Motors, Detroit Motors, Detroit Motors. And then he found a statement by some learned gentleman to the effect that space flight was impossible. This angered Jonathan. And in another he was astonished to see a whole college of professors saying that life could not possibly exist on Mars. This exploded him. He leaped up to rush to Conner's office.

His chair overturned and tripped him and he went down into a heap of agony on the littered floor. A little later something moist and warm woke him and he looked up to find a very small yellow dog of no known descent standing on his chest and licking his face. The owner of this animal proved to be a boy of ten with freckles across his nose and an old baseball cap on his head.

"Tiger!" said the boy. "You come here!"

The untigerish beast got off and Jonathan rose. His leg hurt and his temper was bad. The small boy backed a step and then stood his ground.

Running it altogether, the boy said, "My name is Dicky Collins and you're Dr. Bates and I read all about it and I come under the fence to ask you if me and Tiger could be volunteers in your crew and I don't take up much room and Tiger would help us fight wild beasts if there were any and I could wash dishes or anything if you'd let me please mister, gosh! but I want to go to Mars!"

Jonathan's scowl darkened and all the perplexities of these last weeks flooded in. The

small boy in the baseball cap was still standing there. Jonathan's eyes softened. "So would I, Dicky." He put out his hand to acknowledge that they were introduced.

"Shake, Tiger," said Dicky. And Tiger's paw had to be shaken.

"Where do you live?" said Jonathan.

"In the county home." His face was carefully calm. "My folks left me."

Jonathan pressed that no further. Hastily he said, "Hand me my cigarettes, would you, Dicky?" He lighted one.

"Well?" said Dicky.

Jonathan smiled indulgently. "Dicky, this would be dangerous business even if it could be done, I am afraid."

**S**LOWLY the boy about-faced and walked out, very straight and firm except that the tears blinded him and he could not check them. He got out of Jonathan's range of vision and then stumbled against the fence and clung there, sobbing.

Jonathan came swiftly to his side and picked him gently up and brought him into the hut again. Clumsily he sought to dry the boy's tears.

"I'm sorry," sobbed Dicky. "But all week long I tried and tried and tried to get courage to come and ask and I've been within five feet of the door nine times but I just didn't have the nerve and today I tried and tried and then you fell and Tiger went in and I was scared you were hurt and I took my nerve up and asked and you said No!"

He went into paroxysms of weeping again. Through the tears came, "I did so want to go to Mars and get away from all these people that all they do is lick me and maybe some tribe would make me king and I'd, never, never, never have to come back here, never! But, but you said No!"

He went to pieces again, but not quite so bad and Jonathan was able to interest him in an orange. Then handkerchief in one hand to mop his trickling tears and the huge orange in the other he sat there dejected, all his dreams in fragments and life never again worth living.

"Well, now!" said Jonathan unsteadily. "Well, now!" And he could not get beyond that for before his gaze was marching his own young self, feeding on dreams, planning, searching, thinking, hoping and hoping again that someday he could get away to a place so far that no one would ever trouble him again.

He cleared his throat and started toward

the door. Suddenly he turned and put out his hand.

"It's a deal, Dicky. I don't know how, but it's a deal. And if you'll excuse me I have to see a man named Conner. Have a sandwich while I'm gone."

Dicky was too rattled to notice how long his benefactor was absent. He sat still saying over and over, "Gee! Gee!" And starting up every moment or so to shudder at the thought of Jonathan changing his mind.

Meanwhile in the office of the president of Detroit Motors, Jonathan was being very calm, for once.

"That's the way of it, Mr. Morton. Mr. Conner here has preyed on your credulity. He has blown a bubble which, when it breaks, may well demolish your company. People don't expect a rocket engine. They expect a trip to Mars."

"But good Heavens!" cried Morton, seriously alarmed. "I took it for granted that something was being done, that at least an attempt would be made. I never gave it a thought until this minute! Conner, you fool! your partnership here gave you no right to lead me on, to lie to me!"

"I only told you—" began Conner.

Morton cut him short. "It's not what you told me but what you told the entire country! Just yesterday you said you had announced a date to leave. You can't fake that! The expectation. What was the date?"

"September first," said Conner, cowed. "I thought it would be an easy matter to . . ."

"That Supreme Court will not sit on our case until December first! Conner, you're an idiot. This may cost us into the millions!"

"I only want the run of your plant and your technicians," said Jonathan gently. "A few thousand dollars' worth of materials."

"Bates," said Morton, "if you can swing this and really get away on a test run to the Moon, I'll give you the company check for half a million dollars. And as for your present project, you have a drawing account of whatever you'll need."

In the weeks that followed, Dicky ran errands all day and half the night through a special section of Detroit Motors which was now exclusively Jonathan's. And Jonathan Bates watched drawings grow into test models.

His "rocket engine" was basically very simple. For chemical fuel it might have been

built from the technology of the last two centuries. It gave positive feed control in any varying amounts and it would run from ten to a million foot pounds at the thrust of a hand. It had two barrels of enormous mass, two-foot orifices and eight-foot diameters, with a liquid cooling system within each barrel, force pumped.

The liners could be shifted at will. The barrels fired alternately and sucked in their own feed with the vacuum the explosion had just left. The cooling lines wandered through the ship in such a way that the side away from the sun would carry off the heat. As the cooling liquid left the barrel liner it ran through a heat converter which made auxiliary power. The atomic barrels fitted within these.

**T**HE atomic barrels could be drawn into the ship for repairs and loading and depended on the fission of iron under an alpha booster impact. The iron required shock treatment before being used as fuel, of course, and this was done by supercharging the metal nearly to the point of instability with Cannister particles. The additional shock of the booster would begin an elementary chain reaction which could only be stopped by the exhaustion of fuel.

Chain reaction recharged the boosters, leaving the atomic chamber empty. The boosters shifted magnetism which opened a port and permitted a granule of fuel to fall into the chamber. The port in closing triggered the booster reservoir. The impact on the iron exploded it, which force blasted out and so drove the ship.

The innocent character of the resulting rays, the resistance of the liners, and the ability to regulate the fall of fuel granules from within the ship by simple mechanical means made this motor unique in its time for reliability and it was running, despite its unwieldy character for some two hundred years in all uses and could have been found on old tramps five hundred years after that date.

The only thing which gave trouble in the beginning solved itself. The atomic fuel at low speeds—slow explosions—tended to vibrate the ship badly. Only above a thousand miles per hour could a pilot work the ship in comfort. Jonathan Bates tried three fuels and one of these, zinc, was accidentally but half charged. It gave a slow, powerful thrust even though it wasted half its mass.

Starting magazines, then, were loaded with half-charged zinc. Running fuel was fully charged iron. Chemical auxiliary fuel, consisting of ordinary liquified oxygen and fuel oil, ran the odds and ends of equipment in the ship itself, provided emergency air supply and permitted booster take-off.

Under Jonathan's feverish eyes, the ship grew and prospered. But at best it was very crude for everything about it was guesswork. At this time, so far as anyone knew, no man had dared space and not one solitary fact about space voyaging could be advanced with confidence. But Jonathan's peculiar genius and magnificent courage persevered past all doubts and obstructions until he could say at last the thing was done.

It was on the First of September that he tried the motors with the ship entirely built but unfitted. And despite Morton's cries that he must be on his way, Jonathan knew he had to develop a better liner for the chambers.

By the third of October he was again ready for a test. The tube joinings and the hull braces vibrated themselves to ruin in five hours and twenty minutes running.

Jonathan gave no heed to importunings around him. He built and tested nine sets of fittings before he consented to trust the ship with one. This time he ran the motor for thirty hours, the ellipsoid craft shuddering against her huge cables and balances, the brick wall behind the nozzles growing thin from erosion of impact.

This was well but when she was hung in a cradle of giant size for the testing of her steering jets, it was so obvious that they would overcontrol that Jonathan, from raising power up to incredible heights, had to scale a new motor down to model size for the purpose of turning the vessel easily and stopping her when she arrived on course.

It took him a long time. He was ready on February first for the maiden voyage of the *Detroit Motors Meteor*. And even then he was not sure that it would fly. But he had stalled long enough, Morton said. Interest was cooling. People had begun to whisper that maybe it was a hoax and publicity stunt. And besides, the hearings still went on in the Supreme Court and the deed must be done before a decision was handed down.

Against his judgment and before a crowd he could have done without, at four-thirty P.M. on the first of February, Jonathan Bates waved to Dicky on the sidelines,

scowled at the crowd and withdrew from the blaze of flashbulbs into the pilot compartment of the ship. Police cleared an enormous space already marked out with flags and Jonathan blasted her from the cradle with a savage hand. . . .

Three and a half days later he stood at a lonely cairn and read the penciled note on the torn cheese-package while Tycho gaped beside him.

Reverently he replaced the notice and stood for a moment. He had felt terribly alone. He had been acutely sure that no one was on his side. And yet, there was not one space voyager, there were two.

He would never meet Carlyle for George Carlyle was dead on a worthless beach, massed in a grave with hundreds more, his genius lost forever. But Jonathan Bates would not know this for some days. He knew he was not alone. That his own strange band was already two and that it would grow.

**H**E HAD had a misfortune with his oxygen tanks the day before and he could not spend the time he wished. But he was far from short on fuel and so he had circumnavigated the Moon after his take-off.

And here it was that Bates should have been content to be still. No man had ever seen the back side of the Moon. By some mysteriously ordained power, the Moon's swing about Earth and about its own axis were the same so that in all her days she had presented but one side.

The Moon was not a perfect sphere! The Earth side bulged plainly so that gravity trapped her there, made her coordinate her turn and face Earth always.

He stood off in a low gravity zone and stared about him. The Moon filled the whole sky for him, filled for the instant his whole life.

Jonathan finally tore his gaze away and resolutely checked his drifting ship. He thumped his tanks and they rang nearly full. He checked his fuel and could see no indication of the minute amount that he had burned. He looked at his oxygen and though the central reservoir was now empty, he found the chemical auxiliary entirely full.

Suddenly he was shaking with excitement. Did he dare risk it? How would he charge that oxygen tank when he got there? If he did go, could he manage to get back?

Through the heavy filters on the ports

he stared about the sky until he found Mars. For it was a certain thing to him that if he returned there would be trouble, or at least delay. He wanted no more of their bickering, of the petty commercial grabbing which clung to this ship even in its name.

There, like a beacon leading him straight to harbor, glowed the orange eye of Mars.

In ten minutes he had reloaded the magazines and replaced the tubes in their slots. In fifteen minutes he had plotted a crude course which showed him how near—how terribly near—he would come to the Sun. At five-thirty-eight, though A.M. or P.M. he did not know for certain, he cut in the small gyro stabilizer, attached the steering control and headed out for Mars.

To us in this far time, the distance was puny, an ant's journey. Old ferry boats under drunken mates do it daily in every system inhabited by man. But recall! This was the first time!

How near came the Sun, how greedy its pull that veered the ship off course! How one listened to each miss in the tubes and held one's breath to the next slow ignition. One could tumble down into the greatest fission of all, the Sun, tumble down and be charred long before the quarter of a million mile high corona licked him hungrily at last.

**C**RAWLING masses of the Sun's surface, writhing with atomic fire, took distinctive shape, and sunspots gaped like pits in hell before the voyager's awed gaze. For who, even now, can look intimately on the face of a mighty, roaring star and not feel death in it?

Time after time Bates told himself that he had made a foolish plan. Why had he come away from Earth at a time when Mars was there beyond the Sun, so nearly conjoined? For to detour would be fatal without oxygen.

He was at the "top" then of his parabola. He could shut off all fuel for many hours and let the Sun crack the whip with him and hurl him into Mars.

He did not know how fast he was going. Distances were too great for him to calculate accurately enough, and he had nothing like a spherical space compass then—though he invented it in his log enroute—and no method of taking accurate azimuths on these countless billions of stars he saw so clearly all about the inky sky.

On the twenty-first day of his voyage he

found Mars before him, huge and multi-colored, filling up a quarter of the sky, waiting for him. Waiting with oxygen? His tank was almost empty.

He tried vainly to find "canals" for that was a superstition of those ancient days and found instead vast polar caps extending toward the planet's waist.

Like a great clock in the sky he could see it turn and then he was in close, no longer "out in space" but in the sky of Mars.

There were red-brown mountains, smooth with ages. There were river beds too wide for any river. Only in the equatorial belt were things green and only here did he find what he thought would be a suitable plateau on which to land.

He had already braked. He held off a distance now. He could not tell what was below him with any accuracy and he stared at the great polar caps.

Suddenly he guessed at the riddle of Mars. She was ice-bearded with age, thin-aired, chill. But she was not dying and she was not dead. Gravity drew him gently down to the chosen spot and he braked at last and settled upon the tripod.

He had no meter to tell him if he would live outside the ship. He had no canary to test the air. And he donned a stratosphere suit before he opened his airlock.

He needn't have done so. The tree which cast its shade beside the ship could only live on air.

A curious thing. He knew nothing about trees but it looked like one he had seen on Earth. The grass was thin and shaped into a square. How strangely normal all this struck him.

Gingerly he undid a helmet buckle, cautiously he lifted it. He breathed and did not die.

It was as though he stood on some great peak on Earth, such was the air in heaviness. And then he smelled the strong sweetness of flowers and a winged something flashed down on him and yelled hoarsely. He ducked. And then he laughed at himself.

He felt the soil, the grass, the leaves, and he yelled aloud in joy.

Water was in a brook at hand. The birds ate a fruit and so he tried. He refreshed himself and bathed, calming himself in this momentous instant by doing quite ordinary things, making himself do them. How strange it was that he felt so much at home, so little inclined to alarm.

He spent six days wandering and writing notes and all the wonders about him multiplied again and again until he was seized with impatience to see the whole of it.

He had to invent the means of compressing air for his flasks, but he did it. He had to repair odds and ends about his ship with no tools or torches, and he did them.

At last he could hurl his craft into the sky again and bounce there on one jet, looking down, studying, memorizing lakes and ocean beds and the odd streaks of vegetation which created lines as if in the wake of some unimaginably old cataclysm. He moved back and forth in his study for it seemed to him that somehow he must find out where sentient beings lived. Certainly they must live here. They must have cities. They had to have cities!

He could not know all at once he told himself, and made his sketches and pictures. And then a daring thought struck him. It was going to be too dangerous to cross the Sun again—at least for his nerves. But why should he try?

Venus stood in a triangle away from the Sun. The other two ends of the triangle were Earth and Mars.

**N**OW that he was up he did not care to land again. Horizon fever had taken him. He looked back at Mars. He would penetrate her riddles some day. He would find her people and ancient cities. He would come back!

And the *Meteor* began to jet, faster and faster, with Venus as the goal.

Considering the enormous number of space accidents which followed in the centuries after, it is a remarkable tribute to Jonathan Bates that no mishap befell him, either from ray burns or stray flotsam, often so terrible and final in those times. It was either luck or skill, combined with foresight. But when Bates landed ninety-two days from departure time at the Detroit Motor Stadium, both Jonathan and ship could have taken off again within the day.

His pockets bulged with notes, his lockers were crammed with film and samples of the soil and growths of Mars and Venus. A proud serenity was in his smile, a poise in his mind which would never desert him.

He had gone away from Earth and the truth is that, as it is with every rover, he did not again come wholly home.

They yelled and shouted and applauded



and the papers spread his name. Men scrambled to talk to him, societies fought to award him prizes. Parades were held and bands played.

For nearly eighty days.

It alarmed him a little when the army commandeered his ship "for study." But he was being showered with favors and he thought he could have another, better ship whenever he chose to build it. And how much better it would be!

Gradually the hysteria wore off. There were reasons for it. In the first place, Jonathan never did consider himself a hero and could not learn to take applause. He avoided newsmen and refused to talk. He ducked out of luncheons to be found behind his lab talking with a beaming small boy and a dog. He would not do everything people thought he should. And reaction set in, whispers behind hands. He was too good for them now. That they had always been "too good for him" never entered their minds.

But people were happy enough that the thing had been done, and happy too to let it lie. For one after another discovered the question—"Well, what possible good is it, after all? We can't ever go there."

And so popularity and interest died down and left Jonathan with time to think and be glad that his appearance prevented him ever from becoming a professional hero.

Jonathan found few men ready to part with money for another ship, now. There was no commercial advantage that they could see to be gained. And besides, there were no less than twenty-seven space ships building in all various parts of the world.

Jonathan asked Morton of Detroit Motors, then, for the offered check and Jonathan was not particularly amazed that Morton distinctly did not recall having mentioned it. The Oklahoma oilman had made his boast too public to back down, however, and Jonathan had what the government taxes left of that.

He found that Detroit Motors could no longer spare the room but they gave him the old equipment for which they now had no use. He set it up in a barn nobody wanted and with little assistance from anyone except that of the small boy and the dog, began the *Voyager*.

It took him a long, long time for he had changed things so radically. But he plodded away, an object of occasional curiosity from

passers by, but severely left alone by the newsprints.

They did not remember him until that fatal morning of August 16th when the *Crusader I*, a patchwork miscreation privately and badly built, took off for Mars, shattered her rockets and came back down on a crowd of twenty-two thousand people, killing many and setting afire an area equal to eight city blocks.

This brought governments down like hounds upon all such structures, for the story had more space play in truth than Jonathan's successful voyage had brought forth. The pages of victims and photographs of loved ones left behind!

Within a month the *Loyola*, an explorational vessel supposed to survey the Moon for a future observatory, went out of control in its return and vanished into the Caribbean.

Two months afterwards to a day, the Government ship XI, a copy of Jonathan's first, radioed midway in her maiden attempt to reach the Moon that she had blown her tubes and was out of control. The XI was never heard from again and her fate is unknown.

**S**PACE flight stopped. By mass demand of the people, it was forbidden "until such time as equipment is sufficiently well developed to permit safety"—though just how this was to be done without actually voyaging was a thing Jonathan could not fathom.

They did not trouble him or his ship officially. But space flight had fallen into great disrepute and with it had fallen Jonathan. His moment of fame was gone. And worse than gone, for he was blamed for the disasters just as though he had been consulted about their construction.

Jonathan worked hard and he worked well. He knew what he could count upon, he knew his reserves of supplies could be huge. He knew the tools he would require. He worked long, too preoccupied to notice that coldness and suspicion that greeted him where he went, that children often crowded his ungainly steps and mocked him with shrill cries and pelted him for a monster.

He kept on working, his own aide the faithful child, long since run away from the "Home."

The ship had twice the motive power, three times the weight of the first. It could

make its own oxygen from various substances. It could feel out and automatically avoid "space dust." No ship would be as thorough as that for scores of years to come.

The Government did not bother Jonathan and Jonathan did not bother the Government.

And at last an insulated spheroid stood upon its tripod by the barn and the ceaseless loading was all done.

Jonathan came out and picked up the dog Tiger. The shiny-eyed little boy followed him into the ship.

There was no backward glance, no crowd, no fond farewells. The *Voyager* shuddered, trembled in a bath of flame and then shot skyward, faster and faster, growing smaller and smaller until it was gone.

It never returned.

\* \* \* \* \*

Six years later when Pieter Sven set out for Mars in the *Marco Polo I*, a fine cruise vessel in the hands of a very capable man, he had some doubts as to the capability of his craft to bring him back. And it was with wonder that men received his tale on his return, of having found huge markings on

a mountain side and in their center a weatherproof cache of needful fuel and food.

With it there had been a careful map of Mars in six copies, a list of landing places, a description of edibles to be found, a detail of dangers and taboos and a very painfully printed booklet, protected from the weather, chained to a rock.

"What did it say?" cried Sven indignantly. "It said *Welcome*, how else? And it said it in a very fine way, let me tell you."

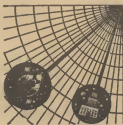
He showed them his photographs of it. The title page said:

A Description of the Atmospheres and Surface Characteristics of Five Planets with Certain Warnings and Dangers to Be Met in the Voyaging of Space, with Plans for Improvements of Space Craft and Equipment.

"Who wrote it?" they demanded. "Where is he?"

"That," said Sven, putting the photos reverently away, "is not too hard to answer."

He withdrew with that calm air men would soon associate with the voyagers of space and he stood for a long, long time in the night above the city's lights, his steady gaze communicating with the stars.



*Can a world which is dedicated to pleasure rally in the face of cosmic crisis? This question is put to the test when a lucky bumpkin, a haughty empress, and an immortal man join forces to fight time-space disaster in*

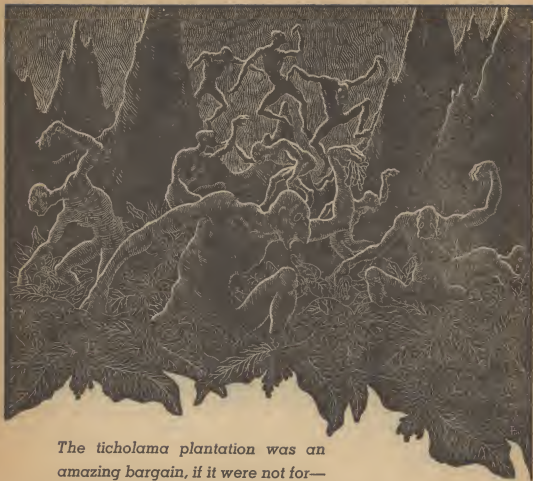
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*The ticholama plantation was an amazing bargain, if it were not for—*

# THE HOWLING BOUNDERS

My brain, otherwise a sound instrument, has a serious defect—a hypertrophied lobe of curiosity.  
—Magnus Ridolph.

**T**HE afternoon breeze off Irremedial Ocean ruffling his beard, yellow Naoslight burnishing the side of his face, Magnus Ridolph gazed glumly across his newly-acquired plantation. So far, so good; in fact, too good to be true.

He shook his head, frowned. All Blantham's representations had been corroborated

by the evidence of his own eyes: three thousand acres of prime ticholama, ready for harvest; a small cottage, native-style, but furnished adequately; the ocean at his doorstep, the mountains in his back-yard. Why had the price been so low?

"Is it possible," mused Magnus Ridolph, "that Blantham is the philanthropist his acts suggest? Or does the ointment conceal a fly?" And Magnus Ridolph pulled at his beard with petulant fingers.

**A Magnus Ridolph Story by JACK VANCE**

Now Naos slipped into Irremedial Ocean and lime-green evening flowed like syrup down out of the badlands which formed the northern boundary of the plantation. Magnus Ridolph half-turned in the doorway, glanced within. Chook, his dwarfish servant, was sweeping out the kitchen, grunting softly with each stroke of the broom.

Magnus Ridolph stepped out into the green twilight, strolled down past the copter landing to the first of the knee-high ticholama bushes.

He froze in his tracks, cocked his head.

"Ow-ow-ow-ow-ow-ow-ow" in a yelping chorus, wild and strange, drifted from across the field. Magnus Ridolph strained, squinted through the dusk. He could not be sure. . . It seemed that a tumult of dark shapes came boiling down from the badlands, vague sprawling things. Olive-green darkness settled across the land. Magnus Ridolph turned on his heel, stalked back to the cottage.

\* \* \* \* \*

**M**AGNUS Ridolph had been resting quietly in his hotel—the Piedmont Inn of New Napoli, on Naos V—with no slightest inclination toward or prospect of an agricultural life. Then Blantham knocked and Magnus Ridolph opened the door.

Blantham's appearance in itself was enough to excite interest. He was of early middle-age, of medium height, plump at the waist, wide at the hips, narrow at the shoulders.

His forehead was pale and narrow, with eyes set fish-like, wide apart under the temples, the skin between them taut, barely dented by the bridge of his nose. He had wide jowls, a sparse black mustache, a fine white skin, the cheeks meshed, however, with minute pink lines.

He wore loose maroon corduroy trousers, in the "Praesepe Ranger" style, a turquoise blouse with a diamond clasp, a dark blue cape, and beside Magnus Ridolph's simple white and blue tunic, he appeared somewhat overripe.

Magnus Ridolph blinked, like a delicate and urbane owl. "Ah, yes?"

"I'm Blantham," said his visitor bluffly. "Gerard Blantham. We haven't met before."

Watching under his fine white eyebrows, Magnus Ridolph gestured courteously. "I believe not. Will you come in, have a seat?"

Blantham stepped into the room, flung back his cape.

"Thank you," he said. He seated him-

self on the edge of a chair, extended a case. "Cigarette?"

"Thank you." Magnus Ridolph gravely helped himself. He inhaled, frowned, took the cigarette from his lips, examined it.

"Excuse me," said Blantham, producing a lighter. "I sometimes forget. I never smoke self-igniters; I can detect the flavor of the chemical instantly, and it annoys me."

"Unfortunate," said Magnus Ridolph, after his cigarette was aglow. "My senses are not so precisely adjusted, and I find them extremely convenient. Now, what can I do for you?"

Blantham hitched at his trousers. "I understand," he said, looking archly upward, "that you're interested in sound investment."

"To a certain extent," said Magnus Ridolph, inspecting Blantham through the smoke of his cigarette. "What have you to offer?"

"This." Blantham reached in his pocket, produced a small white box. Magnus Ridolph, snapping back the top, found within a cluster of inch-long purple tubes, twisting and curling away from a central node. They were glossy, flexible, and interspersed with long pink fibers. He shook his head politely.

"I'm afraid I can't identify the object."

"It's ticholama," said Blantham. "Resilian in its natural state."

"Indeed!" and Magnus Ridolph examined the purple cluster with new interest.

"Each of those tubes," said Blantham, "is built of countless spirals of resilian molecules, each running the entire length of the tube. That's the property, naturally, which gives resilian its tremendous elasticity and tensile strength."

Magnus Ridolph touched the tubes, which quivered under his fingers. "And?"

Blantham paused impressively. "I'm selling an entire plantation, three thousand acres of prime ticholama ready to harvest."

Magnus Ridolph blinked, handed back the box. "Indeed?" He rubbed his beard thoughtfully. "The holding is evidently on Naos Six."

"Correct, sir. The only location which supports the growth of ticholama."

"And what is your price?"

"A hundred and thirty thousand munits."

Magnus Ridolph continued to pull at his beard. "Is that a bargain? I know little of agriculture in general, ticholama in specific."

Blantham moved his head solemnly. "It's a giveaway. An acre produces a ton of ticho-

lama. The selling price, delivered at Starport, is fifty-two munits a ton, current quotation. Freight, including all handling, runs about 21 munits a ton. And harvesting costs you about eight munits a ton. Expenses twenty-nine munits a ton, net profits, twenty-three munits a ton. On three thousand acres that's sixty-nine thousand munits. Next year you've paid the land off, and after that you're enjoying sheer profit."

Magnus Ridolph eyed his visitor with new interest, the hyper-developed lobe in his brain making its influence felt. Was it possible that Blantham intended to play him—Magnus Ridolph—for a sucker? Could he conceivably be so optimistic, so ill-advised?

"Your proposition," said Magnus Ridolph aloud, "sounds almost too good to be true."

Blantham blinked, stretching the skin across his nose even tauter. "Well, you see I own another thirty-five hundred acres. The plantation I'm offering for sale is half the Hourglass Peninsula, the half against the mainland. Taking care of the seaward half keeps me more than busy.

"And then, frankly, I need money quick. I had a judgment against me—copter crash, my young son driving. My wife's eyes went bad. I had to pay for an expensive graft. Wasn't covered by Med service, worse luck. And then my daughter's away at school on Earth—St. Brigida's, London. Terrible expense all around. I simply need quick money."

**M**AGNUS RIDOLPH stared keenly at the man from beneath shaggy brows, and nodded.

"I see," he said. "You certainly have suffered an unfortunate succession of events. One hundred thirty thousand munits. A reasonable figure, if conditions are as you state?"

"They are indeed," was Blantham's emphatic reply.

"The ticholama is not all of first quality?" inquired Magnus Ridolph.

"On the contrary," declared Blantham. "Every plant is in prime condition."

"*Hum-m!*" Magnus Ridolph chewed his lower lip. "I assume there are no living quarters."

Blantham chortled, his lips rounded to a curious red O. "I forgot to mention the cottage. A fine little place, native-style, of course, but in A-One condition. Absolutely livable. I believe I have a photograph. Yes,

here it is."

Magnus Ridolph took the paper, saw a long building of gray and green slate—convex-gabled, with concave end-walls, a row of Gothic-arch openings. The field behind stretched rich purple out to the first crags of the badlands.

"Behind you'll see part of the plantation," said Blantham. "Notice the color? Deep dark purple—the best."

"*Humph,*" said Magnus Ridolph. "Well, I'd have to furnish the cottage. That would run into considerable money."

Blantham smilingly shook his head. "Not unless you're the most sybaritic of sybarites. But I must guard against misrepresentation. The cottage is primitive in some respects. There is no telescreen, no germicide, no autolumine. The power plant is small, there's no cold cell, no laundromat. And unless you fly out a rado-cooker, you'd have to cook in pots over heating elements."

Magnus Ridolph frowned, glanced sharply at Blantham. "I'd naturally hire a servant. The water? What arrangements, if any, exist?"

"An excellent still. Two hundred gallons a day."

"That certainly seems adequate," said Magnus Ridolph. He returned to the photograph. "What is this?" He indicated a patch in the field where one of the spurs from the badlands entered the field.

Blantham examined the photograph. "I really can't say. Evidently a small area where the soil is poor. It seems to be minor in extent."

Magnus Ridolph studied the photograph a minute longer, returned it. "You paint an arresting picture. I admit the possibility of doubling my principal almost immediately is one which I encounter rarely. If you'll tick off your address on my transview, I'll notify you tomorrow of my decision."

Blantham rose. "I've a suite right here in the hotel, Mr. Ridolph. You can call me any time. I imagine that the further you look into my proposition, the more attractive you'll find it."

To Magnus Ridolph's puzzlement, Blantham's prediction was correct. When he mentioned the matter to Sam Quien, a friend in the brokerage business, Quien whistled, shook his head.

"Sounds like a steal. I'll contract right now for the entire crop."

Magnus Ridolph next obtained a quotation

on freight rates from Naos VI to Starport, and frowned when the rate proved a half munit less per ton than Blantham's estimate. By the laws of logic, somewhere there must be flaw in the bargain. But where?

In the Labor Office he approached a window behind which stood a Fomalhaut V Rhodopian.

"Suppose I want to harvest a field of ticholama on Naos Six," said Magnus Ridolph. "What would be my procedure?"

The Rhodopian bobbed his head as he spoke. "You make arrangement on Naos Six," he lisped. "In Garswan. Contractor, he fix all harvest. Very cheap, on Naos Six. Contractor he use many pickers, very cheap."

"I see," said Magnus Ridolph. "Thank you."

He slowly returned to the hotel. At the mnemiphot in the reading room he verified Blantham's statement that an acre of land yielded a ton of ticholama, which, when processed and the binding gums dissolved, yielded about five hundred pounds of resilian. He found further that the demand for resilian exceeded by far the supply.

He returned to his room, lay down on his bed, considered an hour. At last he stood up, called Blantham on the trans-view. "Mr. Blantham, I've provisionally decided to accept your offer."

"Good, good!" came Blantham's voice.

"Naturally, before finally consummating the sale, I wish to inspect the property."

"Of course," came the hearty response. "An interplanet ship leaves day after tomorrow. Will that suit you?"

"Very well indeed," was Magnus Ridolph's reply. . . .

**B**LANTHAM pointed. "That's your plantation, there ahead, the entire first half of the peninsula. Mine is the second half, just over that cliff."

Magnus Ridolph said nothing, peered through the copter window. Below them the badlands—arid crags, crevasses, rock-jumble—fell astern, and they flew out over Hourglass Peninsula. Beyond lay Irremedial Ocean, streaked and mottled red, blue, green, yellow by vast colonies of colored plankton.

They put down at the cottage. Magnus Ridolph alighted, walked to the edge of the field, bent over. The plants were thick, luxuriant, amply covered with the clusters of purple tubes. Magnus Ridolph straightened, looked sidelong at Blantham, who had come

up behind him.

"Beautiful, isn't it?" said Blantham mildly.

Magnus Ridolph was forced to agree. Everything was beautiful. Blantham's title was clear, so Magnus Ridolph had verified in Garswan. The harvester agreed to a figure of eight munits a ton, the work to begin immediately after he had finished Blantham's field. In short, the property at the price seemed an excellent buy. And yet—

Magnus Ridolph took another look across the field. "That patch of poor soil seems larger than it appeared in the photograph."

Blantham made a deprecatory noise in his nose. "I can hardly see how that is possible."

Magnus Ridolph stood quietly a moment, the nostrils of his long distinguished nose slightly distended. Abruptly he pulled out his checkbook.

"Your check, sir."

"Thank you. I have the deed and the release in my pocket. I'll just sign it and the property's yours."

Blantham politely took his leave in the copter and Magnus Ridolph was left on the plantation in the gathering dusk. And then—the wild yelling from across the field, the vaguely seen shapes, pelting against the afterglow. Magnus Ridolph returned into the cottage.

He looked into the kitchen, to become acquainted with his servant Chook, a barrel-shaped anthropoid from the Garswan Highlands. Chook had gray lumpy skin, boneless rope-like arms, eyes round and bottle-green, a mouth hidden somewhere behind flabby folds of skin. Magnus Ridolph found him standing with head cocked to the distant yelping.

"Ah, Chook," said Magnus Ridolph. "What have you prepared for our dinner?"

Chook gestured to a steaming pot. "Stew." His voice came from his stomach, a heavy rumble. "Stew is good." A gust of wind brought the yelping closer. Chook's arms twitched.

"What causes that outcry, Chook?" demanded Magnus Ridolph, turning a curious ear toward the disturbance.

Chook looked at him quizzically. "Them the Howling Bounders. Very bad. Kill you, kill me. Kill everything. Eat up ticholama."

Magnus Ridolph seated himself. "Now—I see." He smiled without humor. "I see! . . . *Hmph.*"

"Like stew?" inquired Chook, pot ready. . .

Next morning Magnus Ridolph arose

early, as was his habit, strolled into the kitchen. Chook lay on the floor, curled into a gray leathery ball. At Magnus Ridolph's tread he raised his head, showed an eye, rumbled from deep inside his body.

"I'm going for a walk," said Magnus Ridolph. "I intend to be gone an hour. When I return we shall have our breakfast."

CHOOK slowly lowered his head and Magnus Ridolph stepped out into the cool silence, full into the horizontal light of Naos, just rising from the ocean like a red-hot stove-lid. The air from the ticholama fields seemed very fresh and rich in oxygen, and Magnus Ridolph set off with a feeling of well-being.

A half-hour's walk through the knee-high bushes brought him to the base of the outlying spur and to the patch of land which Blantham had termed poor soil.

Magnus Ridolph shook his head sadly at the devastation. Ticholama plants had been stripped of the purple tubes, ripped up, thrown into heaps.

The line of ruin roughly paralleled the edge of the spur. Once again Magnus Ridolph shook his head.

"A hundred and thirty thousand munits poorer. I wonder if my increment of wisdom may be valued at that figure?"

He returned to the cottage. Chook was busy at the stove, and greeted him with a grunt.

"Ha, Chook," said Magnus Ridolph, "and what have we for breakfast?"

"Is stew," said Chook.

Magnus Ridolph compressed his lips. "No doubt an excellent dish. But do you consider it, so to speak, a staple of diet?"

"Stew is good," was the stolid reply.

"As you wish," said Magnus Ridolph impassively.

After breakfast he retired to the study, and called into Garswan on the antiquated old radiophone.

"Connect me with the T.C.I. office."

A hum, a buzz. "Terrestrial Corps of Intelligence," said a brisk male voice. "Captain Solinsky speaking."

"Captain Solinsky," said Magnus Ridolph, "I wonder if you can give me any information concerning the creatures known as the Howling Bounders."

A slight pause. "Certainly, sir. May I ask who is speaking?"

"My name is Magnus Ridolph; I recently

acquired a ticholama plantation here, on the Hourglass Peninsula. Now I find that it is in the process of despoliation by these same Howling Bounders."

The voice had taken a sharper pitch. "Did you say—Magnus Ridolph?"

"That is my name."

"Just a moment, Mr. Ridolph! I'll get everything we have."

After a pause the voice returned. "What we have isn't much. No one knows much about 'em. They live in the Bouro Badlands, nobody knows how many. There's apparently only a single tribe, as they're never reported in two places at the same time. They seem to be semi-intelligent simians or anthropoids—no one knows exactly."

"These creatures have never been examined at close hand?" asked Magnus Ridolph in some surprise.

"Never." After a second's pause Solinsky said: "The weird things can't be caught. They're elastic—live off ticholama, eat it just before it's ready to harvest. In the day time they disappear, nobody knows where, and at night they're like locusts, black phantoms. A party from Carnegie Tech tried to trap them, but they tore the traps to pieces. They can't be poisoned, a bullet bounces off their hides, they dodge out of heat-beams, deltas don't phase them. We've never got close enough to use supersonics, but they probably wouldn't even notice."

"They would seem almost invulnerable then—to the usual methods of destruction," was Magnus Ridolph's comment.

"That's about it," said Solinsky brightly. "I suppose a meson grenade would do the trick, but there wouldn't be much specimen left for you to examine."

"My interest in these creatures is not wholly impersonal," said Magnus Ridolph. "They are devouring my ticholama; I want to halt this activity."

"Well—" Solinsky hesitated. "I don't like to say it, Mr. Ridolph, but I'm afraid there's very little you can do—except next year don't raise so tempting a crop. They only go after the choicest fields. Another thing, they're dangerous. Any poor devil they chance upon, they tear him to pieces. So don't go out with a shotgun to scare 'em away."

"No," said Magnus Ridolph. "I shall have to devise other means."

"Hope you succeed," said Solinsky. "No one ever has before."

MAGNUS RIDOLPH returned to the kitchen, where Chook was peeling starchy blue bush-apples.

"I see you are preparing lunch," said Magnus Ridolph. "Is it—?" He raised his eyebrows interrogatively.

Chook rumbled an affirmative, Magnus Ridolph came over beside him, watched a moment.

"Have you ever seen one of these Howling Bounders close at hand?"

"No," said Chook. "When I hear noise, I sleep, stay quiet."

"What do they look like?"

"Very tall, long arm. Ugly—like men." He turned a lambent bottle-green eye at Magnus Ridolph's beard. "But no hair."

"I see," said Magnus Ridolph, stroking the beard. He wandered outside, seated himself on a bench, and relaxed in the warm light of Naos. He found a piece of paper, scribbled. A buzz reached his ears, grew louder, and presently Blantham's copter dropped into his front yard. Blantham hopped out, brisk, cleanly-shaven, his wide-set eyes bright, his jowls pink with health. When he saw Magnus Ridolph, he shaped his features into a frame of grave solicitude.

"Mr. Ridolph, a distressing report has reached me. I understand—I just learned this morning—that those devilish Bounders have been seen on your plantation."

Magnus Ridolph nodded. "Yes, something of that nature has been called to my attention."

"Words can't convey my sense of guilt," said Blantham. "Naturally I'd never have saddled you with the property if I'd known . . ."

"Naturally," agreed Magnus Ridolph siccatively.

"As soon as I heard, I came over to make what amends I could, but I fear they can only be nominal. You see, last night, as soon as I banked your check, I paid off a number of outstanding debts and I only have about fifty thousand munits left. If you'd like me to take over the burden of coping with those beasts." He paused, coughed.

Magnus Ridolph looked mildly upward. "That's exceedingly generous of you, Mr. Blantham—a gesture few men would make. However I think I may be able to salvage something from the property. I am not completely discouraged."

"Good, good," was Blantham's hasty comment. "Never say die; I always admire

courage. But I'd better warn you that once those pestiferous Bounders start on a field they never stop till they've run through the whole works. When they reach the cottage you'll be in extreme danger. Many, many men and women they've killed."

"Perhaps," Magnus Ridolph suggested, "you will permit the harvester to gather such of my crop as he is able before starting with yours?"

Blantham's face became long and doleful. "Mr. Ridolph, nothing could please me more than to say yes to your request, but you don't know these Garswan contractors. They're stubborn, inflexible. If I were to suggest any change in our contract, he'd probably cancel the entire thing. And naturally I must protect my wife, my family. In the second place, there is probably little of your ticholama ripe enough to harvest. The Bounders, you know, attack the plant just before its maturity." He shook his head. "With the best of intentions, I can't see how to help you, unless it's by the method I suggested a moment ago."

Magnus Ridolph raised his eyebrows. "Sell you back the property for fifty thousand munits?"

Blantham coughed. "I'd hardly call it selling. I merely wish—"

"Naturally, naturally," agreed Magnus Ridolph. "However let us view the matter from a different aspect. Let us momentarily forget that we are friends, neighbors, almost business associates, each acting only through motives of the highest integrity. Let us assume that we are strangers, unmoral, predatory."

BLANTHAM blew out his cheeks, eyed Magnus Ridolph doubtfully. "Fartched, of course. But go on."

"On this latter assumption, let us come to a new agreement."

"Such as?"

"Let us make a wager," mused Magnus Ridolph. "The plantation here against—say, a hundred thirty thousand munits—but I forgot. You have spent your money."

"What would be the terms of the wager?" inquired Blantham, inspecting his finger-tips.

"A profit of sixty-nine thousand munits was mentioned in connection with the sale of the property. The advent of the—ah!—Howling Bounders made this figure possibly over-optimistic."

Blantham murmured sympathetically.

"However," continued Magnus Ridolph,



"I believe that a profit of sixty-nine thousand munits is not beyond reason, and I would like to wager the plantation against 130,000 munits on those terms."

Blantham gave Magnus Ridolph a long bright stare. "From sale of ticholama?"

Magnus Ridolph eloquently held his arms out from his sides. "What else is there to yield a profit?"

"There's no mineral on the property, that's certain," muttered Blantham. "No oil, no magnoflux vortex." He looked across the field to the devastated area. "When those Bounders start on a field, they don't stop, you know."

Magnus Ridolph shrugged. "Protecting my land from intrusion is a problem to which a number of solutions must exist."

Blantham eyed him curiously. "You're very confident."

Magnus Ridolph pursed his lips. "I believe in an aggressive attitude toward difficulties."

Blantham turned once more toward the blighted area, looked boldly back at Magnus Ridolph. "I'll take that bet."

"Good," said Magnus Ridolph. "Let us take your copter to Garswan and cast the wager into a legal form."

In the street below the notary's office later, Magnus Ridolph tucked his copy of the agreement into the microfilm compartment of his wallet.

"I think," he told Blantham, who was watching him covertly with an air of sly amusement, "that I'll remain in Garswan the remainder of the day. I want to find a copter, perhaps take back a few supplies."

"Very well, Mr. Ridolph," and Blantham inclined his head courteously, swung his dark blue cape jauntily across his shoulders. "I wish you the best of luck with your plantation."

"Thank you," said Magnus Ridolph, equally punctilious, "and may you likewise enjoy the returns to which you are entitled."

Blantham departed; Magnus Ridolph turned up the main street. Garswan owed its place as Naos VI's first city only to a level field of rock-hard clay, originally the site of native fire-dances. There was little else to commend Garswan, certainly no scenic beauty.

The main street started at the space-port, wound under a great raw bluff of red shale, plunged into a jungle of snake-vine, inch-moss, hammock tree. The shops and dwell-

ings were half of native-style, of slate slabs with curving gables and hollow end-walls; half dingy frame buildings. There was a warehouse, a local of the space-men's union, a Rhodian social hall, an Earth-style drug-store, a side street given to a native market, a copter yard.

At the copter yard, Magnus Ridolph found a choice of six or seven vehicles, all weather-beaten and over-priced. He ruefully selected a six-jet Spur, and closing his ears to the whine of the bearings, flew it away to a garage, where he ordered it fueled and lubricated.

He stepped into the TCI office, where he was received with courtesy. He requested and was permitted use of the mnemiphot. Seating himself comfortably, he found the code for resilian, ticked it into the selector, attentively pursued the facts, pictures, formulae, statistics drifting across the screen. He noted the tensile strength—about the same as mild steel, and saw with interest that resilian dampened with hesso-penthol welded instantly into another piece of resilian.

HE LEANED back in his chair, tapped his pencil thoughtfully against his notebook. He returned to the mnemiphot, dialed ahead to the preparation of resilian from the raw ticholama. The purple tubes, he found, were frozen in liquid air, passed through a macerator, which pulverized the binding gums, soaked in hesso-hexylic acid, then alcohol, dried in a centrifuge, a process which left the fibres in a felt-like mat. This mat was combed until the fibers lay parallel, impregnated with hesso-penthol and compressed into a homogeneous substance—resilian.

Again Magnus Ridolph sat back, his mild blue eyes focused on space. Presently he arose, left the office, crossed the street to the headquarters of the local construction company. Here he spent almost an hour; then, returning to the garage, he picked up his copter, and rising high over the jungle, headed south. The jumble of the Bouro Badlands passed below, Hourglass Peninsula spread before him, with his plantation filling the landward half, that of Blantham's the remainder.

Naos hung low over the sea when he landed. Chung was standing in the pointed doorway, eyes fixed vacantly across the ticholama field, arms dangling almost to the ground.

"Good evening, Chook," said Magnus Ridolph, handing his servant a parcel. "A bottle of wine to aid your digestion."

"R-r-r-r."

Magnus Ridolph glanced into the kitchen. "I see that you have dinner prepared. Well, let us eat our stew, and then the evening will be free for intellectual exercises."

The blurred green twilight drifted down from the badlands, and, dinner over, Magnus Ridolph stepped outside into the evening quiet. Under different circumstances he would have enjoyed the vista—the olive-dark *massif* to his left, the fields, black in the greenish light, the blue-green sky with a few lavender and orange clouds over the ocean. A faint yelp came to his ears—far, far distant, mournful, lonely as a ghost-cry. Then there came a quick far chorus: "Ow-ow-ow-ow."

Magnus Ridolph entered the cottage, emerged with a pair of infra-red-sensitive binoculars. Down from the mountains came the Bounders, leaping pell-mell high in the air, hopping like monstrous fleas, and the suggestion of humanity in their motion sent a chill along Magnus Ridolph's usually imperterbable spine.

"Ow-ow-ow-ow," came the far chorus, as the Bounders flung themselves upon Magnus Ridolph's ticholama.

Magnus Ridolph nodded grimly. "Tomorrow night, my destructive guests, you shall sing a different song."

The construction crew arrived from Garswan the next morning in a great copter which carried below a bulldozer. They came while Magnus Ridolph was still at breakfast. Swallowing the last of his stew, he took them out to the devastated tract, showed them what he wished done.

Late afternoon found the project complete, the last of the equipment installed and Magnus Ridolph engaged in testing the machinery.

A heavy concrete pill-box now rose on the border of the blighted acreage, a windowless building reinforced with steel and set on a heavy foundation. A hundred yards from the pill-box a ten-foot cylindrical block stood anchored deep into the ground. An endless herculoy cable ran from the pill-box, around a steel-collared groove in the block, back into the pill-box, where it passed around the drum of an electric winch, then out again to the block.

Magnus Ridolph glanced around the little room with satisfaction. There had been no

time for attention to detail, but the winch ran smoothly, pulled the cable easily out, around the anchor block, back again. Inside the door rose a stack of resilient plates, each an inch thick, each trailing three feet of herculoy chain.

MAGNUS RIDOLPH took a last look about the pill-box, then strolled sedately to his copter, flew back to the cottage.

Chook was standing in the doorway.

"Chook," said Magnus Ridolph, "do you consider yourself brave, resourceful, resolute?"

Chook's bottle-green eyes moved in two different directions. "I am cook."

"Mmph," said Magnus Ridolph. "Of course. But tonight I wish to observe the Howling Bounders at close quarters, and desiring some assistance, I have selected you to accompany me."

Chook's eyes turned even farther out of focus. "Chook busy tonight."

"What is the nature of your task?" inquired Magnus Ridolph frostily.

"Chook write letter."

Magnus Ridolph turned away impatiently. During the course of the meal he once more suggested that Chook join him, but Chook remained obdurate. And so about an hour before sunset Magnus Ridolph shouldered a light knapsack and set out on foot for his pill-box.

The shadow of the foremost spur had engulfed the little concrete dome when he finally arrived. Without delay he ducked into the dark interior, dropped the knapsack to the floor.

He tested the door. It slid easily up and down, locked securely. He moved the rheostat controlling the winch. The drum turned, the cable slid out to the anchor block, around, returned. Magnus Ridolph now took one of his resilient plates, shackled the tail-chain to the cable, set it down directly before the doorway, lowered the door to all but a slit, seated himself, lit a cigarette, waited.

Shade crept across the dark purple field, the blue-green sky shaded through a series of deepening sub-marine colors. There was silence, an utter hush.

From the mountains came a yelp, far but very keen. It echoed down the rock-canyons. As if it were a signal, a series of other yells followed, a few louder and closer, but for the most part nearly lost out in the wasteland.

"Ow-ow-ow-ow."

This time the cries were louder, mournful, close at hand, and Magnus Ridolph, peering through the peep-hole in the door, saw the tumble of figures come storming down the hill, black against the sky. He dipped a brush into a pan of liquid nearby, slid the door up a trifle, reached out, swabbed the resilient plate, slid the door shut. Rising, he put his eye to the peep-hole.

The howling sounded overhead now, to all sides, full of throbbing new overtones, and Magnus Ridolph caught the flicker of dark figures close at hand.

A thud on top the pill-box, a yell from directly overhead, and Magnus Ridolph clenched his thin old hands.

Bumps sounded beside the pill-box, the cable twitched. The howling grew louder, higher in pitch, the roof resounded to a series of thuds. The cable gave a furious jerk, swung back and forth.

Magnus Ridolph smiled grimly to himself. Outside now he heard a hoarse yammering, then angry panting, the jingle of furiously shaken chain. And he glimpsed a form longer than a man, with long lank arms and legs, a narrow head, flinging itself savagely back and forth from the snare.

Magnus Ridolph started the winch, pulled the plate and its captive approximately ten feet out toward the anchor block, shackled another plate to the cable, daubed it with heso-penthol, raised the door a trifle, shoved the plate outside. It was snatched from his hands. Magnus Ridolph slammed the door down, rose to the peephole. Another dark form danced, bounded back and forth across the cable, which, taking up the slack in the chain, threw the creature headlong to the ground with every bound.

**T**HE YELLS outside almost deafened Magnus Ridolph, and the pill-box appeared to be encircled. He prepared another plate, raised the door a slit, slid the plate under. Again it was snatched from his hands, but this time black fingers thrust into the slit, heaved with a bone-crushing strength.

But Magnus Ridolph had foreseen the contingency, had a steel bar locking down the door. The fingers strained again. Magnus Ridolph took his heat-pencil, turned it on the fingers. The steel changed color, glowed, the fingers gave off a nauseating stench, suddenly were snatched back. Magnus Ridolph shackled another plate to the cable.

Two hours passed. Every plate he shoved

under the door was viciously yanked out of his hands. Sometimes fingers would seek the slit, to be repelled by the heat-pencil, until the room was dense with stifling organic smoke. Shackle the plate, daub it, slide it out, slam the door, run the cable further out on the winch, look through the peep-hole. The winch creaked, the pill-box vibrated to the frenzied tugging from without. He sent out his last plate, peered through the peep-hole. The cable was lined, out to the anchor block and back with frantic tireless forms, and overhead others pelted the pill-box.

Magnus Ridolph composed himself against the concrete wall, found a flask in his knapsack and took a long drink.

A groaning from the winch disturbed him. He arose painfully, old joints stiff, peered through the peep-hole.

A form of concerted action was in progress: the cable was lined solidly on both sides with black shapes. They bent, rose, and the drum of the winch creaked, squawked. Magnus Ridolph released the winch brake, jerked the cable forward and back several times, and the line of black figures swayed willy-nilly back and forth. Suddenly, like a flight of black ghosts, they left the cable, bounded toward the pill-box.

Clang! Against the steel door—the jar of a great weight. Clang! The door ground back against its socket. Magnus Ridolph rubbed his beard. The steel presumably would hold, and likewise the sill, bolted deep into the concrete. But, of course, no construction was invulnerable. Thud! Fine dust sprang away from the wall.

Magnus Ridolph jumped to the peep-hole, in time to glimpse a hurtling black shape, directed seemingly at his head. He ducked. THUD! Magnus Ridolph anxiously played a torch around the interior of the pill-box. Should there be a crack—

He returned to the peephole. Suppose the Bounders brought a length of steel beam, and used it for a battering-ram? Probably their powers of organization were unequal to the task. Once more he seated himself on the floor, addressed himself to his flask. Presently he fell into a doze.

He awoke to find the air hot, heavy, pungent. Red light flickered in through the peep-hole, an ominous crackling sound came to his ears. A moment he sat thoughtfully, while his lungs demanded oxygen from the vitiated atmosphere. He rose, looked forth into a red and white pyre of blazing ticholama. He sat

down in the center of the room, clear of the already warm concrete.

"Is it my end, then, to be fired like a piece of crockery in a kiln?" he asked himself. "No," came the answer, "I shall undoubtedly suffocate first. But," he mused, "on second thought—"

He took his water bottle from the knapsack, brought forth the power pack, ran leads into the water. He dialed up the power, and bubbles of hydrogen and oxygen vibrated to the surface. He pressed his face to the bottle, breathed the synthetic atmosphere. . . .

Blantham's copter dropped to Magnus Ridolph's landing and Blantham stepped out, spruce in dark gray and red. Magnus Ridolph appeared in the doorway, nodded.

"Good morning, good morning," Blantham stepped forward jauntily. "I dropped by to tell you that the harvesters have nearly finished on my property and that they'll be ready for you at the first of the week."

"Excellent," said Magnus Ridolph.

"A pity those Bounders have done so much damage," sighed Blantham looking off in the direction of the devastated area. "Something will have to be done to abate that nuisance."

Magnus Ridolph nodded in agreement.

**B**LANTHAM inspected Magnus Ridolph. "You're looking rather tired. I hope the climate agrees with you?"

"Oh entirely. I've been keeping rather irregular hours."

"I see. What are those two domes out in the field? Did you have them built?"

Magnus Ridolph waved a modest hand. "Observation posts, I suppose you'd call them. The first was too limited, and rather vulnerable, in several respects, so I installed the second larger unit."

"I see," said Blantham. "Well, I'll be on my way. Those Bounders seem to have gotten pretty well into the plantation. Do you still have hope of a sixty-nine thousand munit profit on the property?"

Magnus Ridolph permitted a smile to form behind his crisp white beard. "A great deal more, I hope. My total profit on our transaction should come to well over two hundred thousand munits."

Blantham froze, his wide-set eyes blue, glassy. "Two hundred thousand munits? Are you— May I ask exactly how you arrive at that figure?"

"Of course," said Magnus Ridolph affably. "First of course is the sale of my harvest.

Two thousand acres of good ticholama, which should yield forty-six thousand munits. Second, two hundred forty tons—estimated—of raw resilian, at a quarter munit a pound, or five hundred munits a ton. Subtract freight charges, and my profit here should be well over a hundred thousand munits—say one hundred and ten thousand—"

"But," stammered Blantham, his jowls red, "where did you get the resilian?"

Magnus Ridolph clasped his hands behind his body, looked across the field. "I trapped a number of the Bounders."

"But how? Why?"

"From their habits and activities, as well as their diet, I deduced that the Bounders were either resilian or some closely allied substance. A test proved them to be resilian. In the last two weeks I've trapped twenty-four hundred, more or less."

"And how did you do that?"

"They are curious and aggressive creatures," said Magnus Ridolph, and explained the mechanism of his trap.

"How did you kill them? They're like iron."

"Not during the day time. They dislike the light, curl up in tight balls, and a sharp blow with a machete severs the prime chord of their nervous system."

Blantham bit his lips, chewed at his mustache. "That's still only a hundred fifty or sixty thousand. How do you get two hundred thousand out of that?"

"Well," said Magnus Ridolph, "I'll admit the rest is pure speculation, and for that reason I named a conservative figure. I'll collect a hundred thirty thousand munits from you, which will return my original investment, and I should be able to sell this excellent plantation for a hundred seventy or eighty thousand munits. My trapping expenses have been twelve thousand munits so far. You can see that I'll come out rather well."

Blantham angrily turned away. Magnus Ridolph held out a hand. "What's your hurry? Can you stay to lunch. I admit the fare is modest, only stew, but I'd enjoy your company."

Blantham stalked away. A moment later his copter was out of sight in the green-blue sky. Magnus Ridolph returned inside. Chook raised his head. "Eat lunch."

"As you wish." Magnus Ridolph seated himself. "What's this? Where's our stew?"

"Chook tired of stew," said his cook. "We eat chili con carne now."

Fighting off fear and  
disillusionment, Smith  
bent over his wife



# MARIONETTES, INC.

By RAY BRADBURY

*Braling and Smith sought vacations from their wives, and they almost succeeded when they heard about their synthetic selves!*

**T**HEY walked slowly down the street at about ten in the evening, talking quietly, both about thirty-five, both eminently sober.

"But why so early?" said Smith.

"Because," said Braling.

"Your first night out in years and you go home at ten o'clock."

"Nerves, I suppose."

"What I wonder is how you ever managed it? I've been trying to get you out for ten years for a quiet drink. And now, on the one night, you insist on turning in early."

"Mustn't crowd my luck," said Braling.

"What did you do, put sleeping powder in your wife's coffee?"

"That would be unethical, no. You'll see soon enough."

They turned a corner. "Honestly, Braling, I hate to say this, but you *have* been patient with her. You may not admit it to me, but marriage has been awful for you, hasn't it?"

"I wouldn't say that."

"It's got around, anyway, here and there, how she got you to marry her. That time back in 1979 when you were going to Rio—"

"Dear Rio, I never *did* see it after all my plans."

"And how she tore her clothes and rump-  
led her hair and threatened to call the police  
unless you married her."

"She always was nervous, Smith, under-  
stand."

"It was more than unfair. You didn't love  
her. You told her as much, didn't you?"

"I recall that I was quite firm on the sub-  
ject."

"But you married her anyhow."

"I had my business to think of, as well as  
my mother and father. A thing like that  
would have killed them."

"And it's been ten years."

"Yes," said Braling, his gray eyes steady.  
"But I think perhaps it might change now.  
I think what I've waited for has come about.  
Look here."

He drew forth a long blue ticket.

"Why, it's a ticket for Rio on the Thurs-  
day rocket!"

"Yes, I'm finally going to make it."

"But how wonderful, you *do* deserve it!  
But won't *she* object? Cause trouble?"

**B**RALING smiled nervously. "She won't  
know I'm gone. I'll be back in a month  
and no one the wiser, except you."

Smith sighed. "I wish I were going with."

"Poor Smith, your marriage hasn't exactly  
been roses, has it?"

"Not exactly, married to a woman who  
overdoes it. I mean, after all, when you've  
been married ten years, you don't expect a  
woman to sit on your lap for two hours every  
evening, call you at work twelve times a day  
and talk baby-talk. And it seems to me that  
in the last month she's gotten worse. I wonder  
if perhaps she isn't just a little simple-  
minded?"

"Ah, Smith, always the conservative. Well,  
here's my house. Now, would you like to  
know my secret? How did I make it out this  
evening?"

"Will you really tell?"

"Look up, there!" said Braling.

They both stared up through the dark air.

In the window above them, on the second  
floor, a shade was raised. A man about thirty-  
five years old, with a touch of gray at  
either temple, sad gray eyes, and a small thin  
moustache looked down at them.

"Why, that's *you*!" cried Smith.

"Sh-h-h, not so loud!" Braling waved up-  
ward. The man in the window gestured  
significantly and vanished.

"I must be insane," said Smith.

"Hold on a moment."

They waited.

The street door of the apartment opened  
and the tall spare gentleman with the mous-  
tache and the grieved eyes came out to meet  
them.

"Hello, Braling," he said.

"Hello, Braling," said Braling.

They were identical.

Smith stared. "Is this your twin brother?  
I never knew—"

"No, no," said Braling, quietly. "Bend  
close. Put your ear to Braling Two's chest."

Smith hesitated and then leaned forward to  
place his head against the uncomplaining  
ribs.

*Tic-tic-tic-tic-tic-tic-tic-tic.*

"Oh no! It *can't* be!"

"It is."

"Let me listen again."

*Tic-tic-tic-tic-tic-tic-tic-tic.*

Smith staggered back and fluttered his eye-  
lids, appaled. He reached out and touched  
the warm hands and the cheeks of the thing.

"Where'd you get him?"

"Isn't he excellently fashioned?"

"Incredible. Where?"

"Give the man your card, Braling Two."

Braling Two did a magic trick and pro-  
duced a white card:

MARIONETTES, INC.

Duplicate self or friends; new humanoid-plas-  
tic 1990 models, guaranteed against all physical  
wear. From \$7,600 to our \$15,000 deluxe model.

"No," said Smith.

"Yes," said Braling.

"Naturally," said Braling Two.

"How long has this gone on?"

"I've had him for a month. I keep him in  
the cellar in a tool box. My wife never goes  
downstairs, and I have the only lock and key  
to that box. Tonight, I said I wished to take  
a walk to buy a cigar. I went down cellar  
and took Braling Two out of his box and  
sent him back up to sit with my wife while I  
came out to see you, Smith."

"Wonderful! He even *smells* like you;  
Bond Street and melachrinol!"

"It may be splitting hairs, but I think it  
highly ethical. After all, what my wife wants  
most of all is *me*. This Marionette is me to  
the hairiest detail. I've been home all evening.  
I shall be home with her for the next month.  
In the meantime another gentleman will be  
in Rio after ten years of waiting. When I  
return from Rio, Braling Two here will go  
back in his box."

SMITH thought that over for a minute or two. "Will he walk around without sustenance for a month?" he finally asked.

"For six months if necessary, and he's built to do everything, eat, sleep, perspire, everything, natural as natural is. You'll take good care of my wife, won't you, Braling Two?"

"Your wife is rather nice," said Braling Two. "I've grown rather fond of her."

Smith was beginning to tremble. "How long has MARIONETTES, INC. been in business?"

"Secretly, for two years."

"Could I—I mean, is there a possibility —" Smith took his friend's elbow earnestly. "Can you tell me where I can get one, a robot, a marionette, for myself? You will give me the address, won't you?"

"Here you are."

Smith took the card and turned it round and round. "Thank you," he said. "You don't know what this means. Just a little respite. A night or so, once a month even. My wife loves me so much she can't bear to have me gone an hour. I love her dearly, you know, but remember the old Oscar Wilde poem: 'Love will fly if held too lightly, love will die if held too tightly.' I just want her to relax her grip a little bit."

"You're lucky, at least, that your wife loves you, Hate's my problem. Not so easy."

"Oh, Nettie loves me madly. It will be my task to make her love me comfortably."

"Good luck to you, Smith. Do drop around while I'm in Rio. It will seem strange, if you suddenly stop calling by, to my wife. You're to treat Braling Two, here, just like me."

"Right! Good-by. And thank you."

Smith went smiling down the street. Braling and Braling Two turned and walked into the apartment hall.

On the cross-town bus, Smith whistled softly, turning the white card in his fingers:

Clients must be pledged to secrecy, for while an act is pending in Congress to legalize MARIONETTES, INC., it is still a felony, if caught, to use one.

"Well," said Smith.

Clients must have a mould made of their body and a color index check of their eyes, lips, hair, skin, etc. Clients must expect to wait for two months until their model is finished.

"Not so long," thought Smith. "Two months from now my ribs will have a chance to mend from the crushing they've taken. Two months from now my hand will heal

from being so constantly held. Two months from now my bruised under-lip will begin to reshape itself. I don't mean to sound *ungrateful*. He flipped the card over:

MARIONETTES, INC. is two years old and has a fine record of satisfied customers behind it. Our motto is "No Strings Attached." Address: 43 South Wesley Drive.

The bus pulled to his stop, he alighted, and while humming up the stairs he thought, Nettie and I have fifteen thousand in our joint bank account. I'll just slip eight thousand out as a business venture, you might say. The Marionette will probably pay back my money, with interest, in many ways. Nettie needn't know. He unlocked the door and in a minute was in the bedroom. There lay Nettie, pale, huge, and piously asleep.

"Dear Nettie." He was almost overwhelmed with remorse at her innocent face there in the semi-darkness. "If you were awake you would smother me with kisses and coo in my ear. Really, you make me feel like a criminal. You have been such a good, loving wife. Some times it is impossible for me to believe you married me instead of that Bud Chapman you once liked. It seems that in the last month you have loved me more wildly than *ever* before."

Tears came to his eyes. Suddenly he wished to kiss her, confess his love, tear up the card, forget the whole business. But as he moved to do this, his hand ached and his ribs cracked and groaned. He stopped, with a pained look in his eyes, and turned away. He moved out into the hall and through the dark rooms. Humming, he opened the kidney-desk in the library and filched out the bank book. "Just take eight thousand dollars is all," he said. "No more than that." He stopped. "Wait a minute."

HE rechecked the bank book frantically. "Hold on here!" he cried. "Ten thousand dollars is missing!" He leaped up. "There's only five thousand left! What's she done? What's Nettie done with it? More hats, more clothes, more perfume! Or wait—I know! She bought that little house on the Hudson she's been talking about for months, without so much as a by your leave!"

He stormed into the bedroom, righteous and indignant. What did she mean, taking their money like this? He bent over her. "Nettie!" he shouted. "Nettie, wake up!"

She did not stir. "What've you done with my money!" he bellowed.

She stirred fitfully. The light from the street flushed over her beautiful cheeks.

There was something about her. His heart throbbed violently. His tongue dried. He shivered. His knees suddenly turned to water. He collapsed. "Nettie, Nettie!" he cried. "What've you done with my money!"

And then, the horrid thought. And then the terror and the loneliness engulfed him. And then the fever and disillusionment. For, without desiring to do so, he bent forward and yet forward again until his fevered ear was resting firmly and irrevocably upon her round pink bosom. "Nettie!" he cried.

*Tic-tic-tic-tic-tic-tic-tic-tic-tic-tic-tic-tic-tic-tic-tic-tic.*

\* \* \* \* \*

As Smith walked away down the avenue in the night, Braling and Braling Two turned in at the door to the apartment. "I'm glad he'll be happy, too," said Braling.

"Yes," said Braling Two, abstractedly.

"Well, it's the cellar box for you, B-Two." Braling guided the other creature's elbow down the stairs to the cellar.

"That's what I want to talk to you about," said Braling Two, as they reached the concrete floor and walked across it. "The cellar. I don't like it. I don't like that tool box."

"I'll try and fix up something more comfortable."

"Marionettes are made to move not lie still. How would you like to lie in a box most of the time?"

"Well—"

"You wouldn't like it at all. I keep running. There's no way to shut me off. I'm perfectly alive and I have feelings."

"It'll only be a few days now, I'll be off to Rio and you won't have to stay in the box. You can live upstairs."

Braling Two gestured irritably. "And when you come back from having a good time, back in the box I go."

Braling said, "They didn't tell me at the Marionette Shop that I'd get a difficult specimen."

"There's a lot they don't know about us," said Braling Two. "We're pretty new. And we're sensitive. I hate the idea of you going off and laughing and lying in the sun in Rio while we're stuck here in the cold."

"But I've wanted that trip all my life," said Braling quietly.

He squinted his eyes and could see the sea and the mountains and the yellow sand and the sound of the waves was good to his inward mind. The sun was fine on his bared

shoulders. The wine was most excellent.

"I'll never get to go to Rio," said the other man. "Have you thought of that?"

"No, I—"

"And another thing. Your wife."

"What about her?" asked Braling, beginning to edge toward the door.

"I've grown quite fond of her."

"I'm glad you're enjoying your employment." Braling licked his lips nervously.

"I'm afraid you don't understand. I think—I'm in love with her."

**B**RALING took another step and froze. "You're what?"

"And I've been thinking," said Braling Two. "How nice it is in Rio and how I'll never get there and I've thought about your wife and—I think we could be very happy."

"T—that's nice." Braling strolled as casually as he could to the cellar door. "You won't mind waiting a moment, will you, I have to make a phone call."

"To whom?" Braling Two frowned.

"No one important."

"To Marionettes Incorporated? To tell them to come get me?"

"No, no, nothing like that!" He tried to rush out the door.

A metal-firm grip seized his wrists. "Don't run!"

"Take your hands off!"

"No."

"Did my wife put you up to this?"

"No."

"Did she guess? Did she talk to you? Does she know? Is that it?" He screamed. A hand clapped over his mouth.

"You'll never know, will you." Braling Two smiled delicately. "You'll never know."

Braling struggled. "She *must* have guessed, she *must* have affected you!"

Braling Two said, "I'm going to put you in the box, lock it, and lose the key. Then I'll buy another Rio ticket for your wife."

"Now, now, wait a minute, hold on, don't be rash, let's talk this over!"

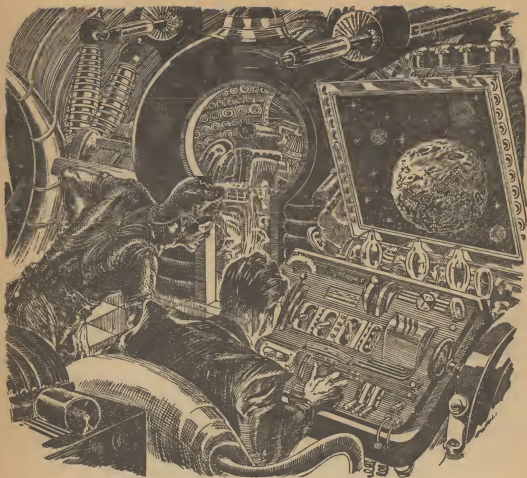
"Good-by, Braling."

Braling stiffened. "What do you mean, good-by!"

Ten minutes later, Mrs. Braling awoke. She put her hand to her cheek. Someone had just kissed it. She shivered and looked up. "Why—you haven't done that in years," she murmured.

"We'll see what we can do about that," someone said.





"You won't hit the moon unless you change course"

# EMIT TURNOVER

By NOEL LOOMIS

*Fated to miss the moon, a  
rocket-ship's doomed to  
be lost in space, unless—*

**B**RAMBILLA was a big man filled with energy, which at this moment he was expending on Professor Smith. "I may say, Professor, that as a member of the board of regents of U. S.

Technological Institute I would feel it—shall we say keenly?—if my only son should be failed in one of your classes?"

Professor Smith had no inclination to smile at the unobtrusive threat. Smith was a young man to be a full professor in the College of Space Engineering in the finest technical school on Earth. He was also a man of calmness and dignity by his age, but more than that, he was well aware that men's

motivations sometimes were small in stature.

If a teacher expected to be head of the Department of Astrogational Mathematics, for instance, or director of one of the numerous research programs, he would do well to have friends on the board of regents. Professor Smith looked steadily across his gasteel desk at the big sandy-haired man who was trying to bulldoze his son through a diploma. He did not show how much Brambilla's threat had disturbed him.

"It does not seem to me that your son is particularly suited to pilot an interplanetary ship. Why didn't he go into economics?" Smith almost said more about Richard Brambilla's qualifications, about the fact that the boy was much too lazy ever to be an interplanetary pilot, but he remembered Brambilla's immense fortune and reconsidered.

"The field is very small," he said instead, "and in the next few years, when man reaches past the moon with his ships, then certainly the field will be limited to those who pass the most exhaustive mental, physical, emotional, and philosophical tests. On a fifty-million-mile trip to Mars one will want everything, especially the pilot, as near perfection as humanly possible."

Brambilla ignored his words. "You've got a good job here, haven't you, Doc?"

Smith nodded. Any sort of instructorship with U. S. Tech carried great prestige, and a professorship was enough to make one almost legendary. Yes, Professor Smith enjoyed his position.

"Getting a good salary?"

"Adequate," Smith said dryly.

"Okay!"

**A**BRUPTLY Brambilla moved forward to the edge of his chair. He was sitting militarily erect, and his aggression and self-confidence impressed even Smith. His next words were blunt:

"Don't play hard to get with me, Professor. Everybody knows you teachers have the easiest jobs in the country. You sit on your rear end, and read somebody else's book and tell the kids to learn it. You never do anything constructive. You don't take any part in world affairs. You don't make any of the decisions that run the world."

Professor Smith tried hard to conceal the humiliation he felt at Brambilla's indictment. "The integrity of the teaching profession—" he started, realizing this was a well-worn angle but feeling impelled to speak.

"Integrity, bosh! You can be had, just like anybody else." His eyes narrowed in a knowing look. "You've *been* had, Doc. I know about Freddie Yonnicks. You passed him and he's a pilot now—but he was failing in one of your courses and everybody knew it. Now listen, Doc. You've got a soft, easy job and when anything comes up you pass the buck to somebody else. That's why you're a teacher." His lip curled in simulated disgust. "Sure, I'll make it worth your while. You pass Dick and you'll find ten thousand dollars under your door on Christmas morning. Okay?" He rose and put on his hat with a firm, unawful movement.

Professor Smith let him go without a word. He sat for a moment at his desk, trying to compose himself from the indignity to which he had been subjected and attempting to overcome the precipitate and severe depression into which Brambilla had plunged him.

It was true that teachers were not hired to make decisions. It was their job to train the men who would make decisions. But the accusation hurt, because it implied that a teacher was a spineless person who could not apply the things he taught.

Well, it was of no use to pity himself. He got control of himself. The pressure eased slowly in his throat. Professor Smith got up and walked across the big room to the tall Gothic windows. For a moment he looked out at the vast campus and its many great buildings.

The College of Space Engineering alone had twelve thousand undergraduates and three thousand graduate students—one tenth of the total in U. S. Tech. Across the automatic walkway—for no vehicles were allowed on the campus—and across a small park and outdoor aviary, the administration building of the college filled a solid block with its white limestone bulk, and its thirty stories went almost as high as Professor Smith's office in the Astrogational Math Building.

Professor Smith much preferred, he thought, the spires and towers of his building to the modern and perhaps more functional Ad Hall, as the students called it—perhaps because he himself was tall and slim.

The professor sighed and turned. With long, firm steps he went across the floor to the part of his suite that had been made into a library by enclosure within filled book-cases. He went through a passageway formed by the cases and stepped onto a thick

rug. A man in the distinctive deep blue uniform of the United Nations' military service got up.

"Sit down, General," Smith said.

General Osborne, Chief of Staff for the Interglobal Defense Committee, fixed his icy blue eyes on Smith. "You seem to have your own troubles, Professor." He shook his grizzled, bullet-like head. "One would think that a professor in this school—"

"It isn't often that this happens," Smith said.

"I notice you didn't give him an answer."

"No. I need some time."

"What *will* you do?" Osborne asked curiously.

"Frankly, I don't know. Should I be practical and consider my prestige and economic position, or should I be idealistic?"

"He talked about a Fred somebody," Osborne suggested.

SMITH accepted a cigarette from the general. "That's the worst of it. I did pass Fred Yonnicks in Rocket Navigation Eight—Fixed Orbits, when I should not have," Smith said. "Class of Nineteen Sixty-six." Professor Smith blushed a little. "To tell the truth, Freddie's father passed *me* some eighteen years ago when I was giving too much attention to the class play and the championship gym team and the homecoming queen." Smith smiled wryly. "I thought—well, if there ever was an excuse, I had one. Freddie was a good boy—just suddenly began to major in bowling, I guess. But now Brambilla holds that over me as a threat and any taint of anything is a threat to a professorship in this school."

"Probably Freddie won't be accredited as a full pilot," the general said soothingly.

Professor Smith fixed his gray eyes on the general. "On the contrary, Freddie last week was promoted to pilot on the lunar passenger run. So you see what can happen if Brambilla starts talking." The professor blew a rolling smoke ring the length of the mahogany table. "Well, General, let's get to your business."

For a moment he heard the general talking, but he was really thinking about Brambilla. Perhaps it was possible that prudence should overcome scruples this time. Brambilla had seemed determined. Then the professor's mind became aware of General Osborne's words:

"—not generally known, but for twenty

years we have been receiving microwave messages from Mars at each period of opposition, every seven hundred and eighty days or so. We never have been able to decode them. Incidentally, at each time of opposition we also have tried to transmit messages to that planet."

Professor Smith looked up. "Yes?"

"This is nineteen seventy-one. On August twenty-three, day after tomorrow, Mars will be the closest since nineteen fifty-six. And for the first time, the fifteen-hundred-centimeter reflector on the moon is in operation." Osborne paused impressively.

"That's a fifty-foot mirror," Smith observed, and smiled. "With no air on the moon to interfere, observation of Mars will be like watching your neighbor take a bath with a three-inch telescope."

Osborne grinned. "The staff at Lunar Observatory have had the thing aimed at Mars for two weeks now, and they have gotten some—well, interesting pictures. They have advised us pretty steadily, and last week a batch of films came in on the *Satellite*. Patterson called a quick meeting of the Interglobal Defense Committee, and three days later they called me."

"What was on the films?" Smith asked sharply.

Osborne drew a heavy breath. "That fifty-foot disk shows things pretty big, comparatively. There are a lot of cylindrical-shaped objects on Mars, millions of them, and they all seem to move at high speed. The defense council is worried, more so because at this particular opposition there aren't any radio signals. Some communications men claim those signals didn't come from Mars anyway, but nevertheless we can't be reckless when the safety of the whole earth is involved."

"Do you consider that likely?"

"*Likely* is a poor word, Professor. I like *possible* better myself. Suppose there are entities on Mars who have developed space-travel to the point where they can send a whole fleet across forty million miles of ether to Earth. They're probably two hundred years ahead of us there—and why not at least that much ahead of us in development of weapons?"

"To say nothing," Professor Smith added soberly, "of the likelihood that they would have no set of moral values comparable to ours."

"You're getting the picture. To cut it

short, if those are space-ships, it means an interplanetary invasion. The defense council has been up nights for three weeks now, and they have decided it is better to attack than to be attacked. For just one possibility out of dozens, we don't know what kind of deadly diseases or viruses or what-not they might bring."

"So?" Professor Smith was fully alert.

"So they have ordered me to fire two hundred iron-bombs at Mars from our base on the moon two days from now." He glanced at his watch. "Fifty-one hours, to be exact. By decimal time, which we use on the moon, of course, F-hour is eighty-one-fifty, August twenty-three."

Professor Smith shuddered. "Iron bombs are something like eighty per cent fissionable. Two hundred would destroy any planet."

"That's right. So I argued. I figure it's time for men to ease off from shooting first and looking afterward, especially in the case of a planet. I don't think it's smart in the first place to go starting an interplanetary war. These fellows, if they have ships that can reach earth, may also have a defense against atomic bombs, and they might get mad at us for trying it."

"Very good reasoning," said Smith. "I'm glad you are not in favor of propagating war past our global boundaries if it can be avoided."

"I'd like to see a chance for peace, anyway. How do we know that any other species anywhere knows anything about fighting? Man might be the only dominant fighting species in the universe."

"Possible," observed Smith. "Where do I come in?"

Osborne stood up. He was a tremendous man, and when Smith watched him he thought of one word—iron.

Osborne said, "Professor, I made a deal with the committee. This is a touchy thing, you know. It's not the sort of thing the public can decide. It has to be done by men who know their business. You're the most capable man in the world on interplanetary relationships. You can look at those pictures and tell whether those are space-ships or not."

"Smith gasped.

"I?"

"Yes, you." Osborne smiled. "You're not going to refuse to make a decision, are you?" he said pointedly.

"Well, no, but—"

"In this field, you're what Einstein was to the field of space and time. You would know, Professor," Osborne continued earnestly. "You are also a man of undeviating honesty. The council will accept your judgment."

Professor Smith felt faint. "Oh, no. They can't decide the fate of a world on one man's word."

"They're going to."

"We'll get a committee!"

"The only two men on earth qualified to sit with you on a committee—Nonal and Zine—are out of the picture. Nonal is on the south polar expedition, and Doctor Zine is somewhere in his bathysphere at the bottom of the Mindanao Deep investigating the dispersion of hard radiation. That leaves you, Professor." The general looked again at his watch. This time it was only a gesture. "We shall have to leave New York tomorrow morning on the *Satellite* to reach the moon in time for you to make a decision. They want you at the observatory by Seventy-two Hundred. They will have just finished developing the close-ups, and if you think they may be space-ships, we fire the bombs. Okay, Professor?"

Professor Smith arose to his feet. He went to a section of the bookcase and pressed it. It turned. On the back side was a shelf with a bottle of Scotch and some glasses. The professor poured a drink for the general and one for himself.

"This is something I do most rarely," he muttered. He tossed it down. "If I say they are space-ships, Earth will disintegrate the planet Mars. If I say they are not, and they should later turn out to be that, our *own* planet might be disintegrated." He poured another drink. "Look, General, how about the public?"

"The time is short," Osborne pointed out. "I have firing orders. And I'll say that I would consider it unwise at this time to release any information on such a thing as possible visitations from Mars. The public is inclined to be hysterical when it suddenly faces unknown danger. No, Professor, it is all up to you. Shall I pick you up in the morning?"

**P**ROFESSOR Smith repressed a shiver as he put down the glass. "The *Satellite* will blast away at seven, I believe. How about reservations?"

"I have them," said Osborne, picking up his officer's cap. "I'll be by at six. And by the way, have you ever made the trip to the moon?"

Professor Smith grinned engagingly. "At a tenth of a cent per pound per mile, my calculations indicate that a round-trip to the moon would come to sixty-five thousand dollars. And that, my friend, is not the kind of money a professor can spend for luxuries." He added wistfully, "I always wanted to ride one of the rockets, too."

Osborne nodded. "Your baggage will be gratis, but the limit is twenty pounds. You can pick up special lightweight equipment in the big store at the field, if you wish."

"Thanks," said Smith. After Osborne had gone, he poured himself one more drink, and sank heavily into a big chair. He did not want responsibility of that sort, but he saw no immediate way of avoiding it. With firing orders already issued, it would be a gross act of negligence for him to refuse to give an opinion.

Also, he knew how touchy the U. N. committees were. He could appreciate, without being told, how hard Osborne must have argued for even this concession, and he knew that the least indication of confusion on his part would upset it. But he wished he could have been picked for something else, because Astrographic Interpretation or the reading of extra-terran photographs was the one course Professor Smith had slighted in his undergraduate days; that was the course in which Professor Yonnicks, eighteen years before, had been affected by Smith's personal magnetism and had given him a passing grade without Smith's earning it.

Glumly Smith wondered if a man's smallest missteps invariably required an accounting. It was considerably too late to wish he had worked harder under Yonnicks. What he had to do now was figure out some way to give an intelligent answer. . . .

The rocket terminal at 6:30 a.m. was like any airport—a big area paved with concrete and fenced in with steel. A group of buildings was at the entrance, and hundreds of persons rushed importantly from one place to another, pursued by a raucous agglomeration of sound from horns, bells, and loud-speakers.

He was deeply impressed, however, by the *Satellite*, a giant ship, sleek and shiny in beryllium and magnesium, poised in her great launching-rack in the center of the field. To

be truthful, he was overwhelmed. He was about to see in action the things he had taught for eight years. He applied for and received one of the pamphlets listing technical details of the ship. While General Osborne took care of the tickets, Smith went through the leaflets.

As atomic power was still inapplicable to rocket propulsion, liquid fuels were used, and that fact was the reason for the high importance of Smith's subject, Orbits and Trajectories. The passenger limit for this ship was thirty-one thousand pounds—approximately two hundred persons. And after baggage, and supplies for the ship, were loaded, there would be a margin of exactly two point one per cent of the weight of ship and fuel available for carrying new equipment for the Lunar Observatory.

Smith explained to Osborne as they were standing in the weighing-in line, why exact weights were important.

**A** SPACE-SHIP was loaded with enough fuel to accelerate to escape-velocity, plus the amount required for the mid-point turnover, plus one hundred gallons reserve.

"After we reach escape-velocity, we coast. At exactly the point where gravitational attraction is equal between earth and moon, we make the turnover. That is, we change ends. This is so the end that holds the rockets will be presented to the surface of the moon for a braking effect in landing. It takes a good deal less weight and therefore less fuel to do it that way than it would take to install a set of blasting tubes on the front end."

"But why," asked Osborne, "is the exact turnover time important? The direction and velocity is all calculated before we leave, isn't it, so we shall hit the moon?"

"Yes, provided turnover takes place at the exact given time, because the effect of the turnover blasts on the ship's speed must be considered. Exact weight, velocities, time, and direction—all are vital to the computation."

"What happens if something goes wrong?"

"An error in turnover time by a few seconds, without a compensating adjustment, would mean our missing the moon's gravitational field. The ship must come very close, to be influenced by the moon's mass. We go into an orbit around the moon while we cut down speed with rocket blasts and interactors with the moon's gravitational

forces, but it takes almost as much fuel to reduce our speed as it takes to build it up in the first place.

"Now, obviously in astrogation a pilot can't sit there and guide his ship to the moon by sight. It must all be done by mathematics. One full blast on the rockets would consume several hundred pounds of fuel, and if he should carry enough fuel to allow for seat-of-the-pants maneuvering, he wouldn't have any room for a pay load. So here's the thing in a nutshell: the margin allowable for a pay load anyway is very small—something like four per cent all told—which makes it impossible to allow a safety margin of fuel for a ship which misses the moon. The moon's gravity *must be used*. If the ship goes by the moon outside of a certain limit, it will go into outer space and coast forever, because the pilot has barely enough fuel to stop the ship, to say nothing of getting it back and landing it."

"It sounds like a ticklish proposition," Osborne said soberly.

"It is," the professor assured him.

In a big room they were weighed, their baggage weighed—to the ounce—and passed through a gate. "That's Patterson up ahead there," Osborne whispered, and Smith looked as soon as he could, seeing a white-haired, vigorous-looking man with a big briefcase. "He'll be with you," said Osborne, "all the time, probably."

It gave Smith a sinking feeling, which was partially relieved a moment later when the last man in the line, number two hundred, was refused passage because he would have made the ship twenty-eight pounds overweight.

Smith was impressed to see that space navigation was as exacting as he always had taught it should be.

The *Satellite* stood on her tail, and the passengers climbed a long magnesium stair in the center of the ship to the lounge, which was just above the midship section. Above—or forward, Professor Smith noted. It was a little queer to see how quickly the usual designations of space became meaningless. The takeoff was easy. Compressed air launched them, and when the jets took over there was a moment of sickishness but no noise. It seemed almost at once that they began to float. Professor Smith drew a grateful breath and relaxed.

They were coasting free at twenty-five thousand miles an hour.

OSBORNE introduced him to Patterson. The white-haired, square-faced president of the Interglobal Defense Committee was blunt.

"No, we don't know that any other sentient species is belligerent—and on the other hand they might be nothing *but* a fighting machine. We can't take a chance. If there is any reasonable doubt, the order to fire will stand. After all, gentlemen, we are discussing the safety of the earth. The answer is up to you, Professor Smith, and only because we on the committee are honestly divided. We don't know. You will. All I have to say is that we cannot afford a mistake."

He turned his piercing eyes on Smith, who said carefully, "We'll see," while at the same time he was inwardly tense. Why must they put a poor teacher on the tightest spot in Earth's history? Osborne seemed to read his thoughts.

"You are a teacher," he said gravely. "You are accustomed to viewing things objectively and giving an unbiased opinion. We are willing to depend on you."

The weight of that responsibility became depressing. Bramilla had been right. Teachers did not make decisions. Perhaps it was because they were not temperamentally suited for it. Perhaps that was why they were teachers.

Patterson did not help. "You will have to use a magnifying glass to examine the pictures," he said. "Our best estimate is that the objects are in the nature of a thousand feet in length, and even the six-hundred-inch reflector on the moon could not see that small an object thirty-four million miles away if it were not for the nucleonic screens and the new cosmic-ray photos, something like radar plus a radical new fine-grained film that will record anything the mirror can see."

Professor Smith excused himself. He needed to be alone. To recover his inner composure he went to the chart-room and examined the posted figures. He began to jot them down. Here was a real problem in turnover time, with the fate of two worlds hinging on it. He sat down and calculated.

Presently his figures indicated that turnover time would come at exactly 64:21:45, decimal time. He checked his space watch, a present from the class of '60, with the ship chronometer, which was marked off in tens and centims and millims, then sat back

complacently to await turnover time. This was familiar ground. For the first time since Osborne's visit, Professor Smith had to admit that he was getting what the undergraduates might once have called a "large charge" out of the trip.

At 64:10 he looked at his watch. At 64:20 he braced himself, but the warning light did not flash until 64:46.

The turnover itself was gentle. The *Satellite* swung in a big arc, and centrifugal force was nicely used; only one glass of water, on the edge of a table, was spilled. But Smith was worried. He checked his calculations. They were correct. He went back to the chart-room and checked the data. That too was correct. Smith's chest began to tighten. Twenty-five centitems was plenty to make them either crash or miss. In this case it would be a miss!

He stopped the first officer and asked him if the posted data was accurate. The officer said it was, even to the name of the pilot. "New pilot this trip," he noted. Professor Smith read the placard in the lower right corner of the bulletin board and went cold. The sign said, "Pilot, Frederick H. Yonicks."

Professor Smith sat down. He was suddenly too weak to stand, even in the mild artificial gravity of the ship. Freddie Yonicks, the boy who had slighted Fixed Orbits and Trajectories. Presently Smith arose and went to the captain's cabin, showed his identification, and secured permission to visit Freddie. He went down the magnesium ladder and found Freddie sitting comfortably in a nitrofoam chair watching the mass of blinking lights and wavering dials, and the growing reflection of the moon in a ground glass screen.

**F**REDDIE shook hands with a glad smile. He invited the professor to sit down and showed him all the gadgets, including the new differential calculator, the one item with which the professor was not familiar. Freddie remembered the time when the professor had taken the entire class for a "ride" in the trainer and one rocket-firing button had gotten stuck. The trainer had turned completely over and they had all slid around the walls and ceiling until the professor oriented himself long enough to punch the deactivator button.

"You'd have made a good pilot, Professor," Freddie said warmly.

Professor Smith thanked him, thinking that without doubt this *was* the glamorous end of the profession. He even envied Freddie just a trifle. The assistant pilot went off duty, and Professor Smith said casually, "How do you figure turnover time?"

Freddie looked at him curiously. "Why, just the way you taught me."

"You didn't learn how to do that in my class." Smith was fighting to keep his voice level.

Freddie grinned. "We have the electronic brain here that does it quicker and better." "You surely check it manually."

"Well, no—I don't."

Professor Smith swallowed hard. "You mean you left it all up to the calculator?"

"Sure." Freddie began to be a little defensive.

"May I see the readings on the instruments?"

"Yes, I guess so." Freddie was a little doubtful but he showed Smith the tape, and for the next hour the professor calibrated speed, azimuth, declension, weight, time, and acceleration. Then with the Astronautic Guide he checked the position of the moon against the arrival time of the *Satellite*. When he finally looked up at Freddie, his face was taut.

"You delayed turnover for twenty-five centitems. When you reach rendezvous point, the moon will be far past it. At your present azimuth"—He looked at the thin, slowly wavering band of sodium light projected against a calibrated scale—"you're off course about fifteen Angstroms."

Freddie's eyes began to narrow. "Are you telling me I don't know how to hit the moon?"

Smith said sharply, "I'm telling you you *won't* hit it unless you change course. And that must be done quickly. The angulation is constantly increasing."

Freddie licked his lips nervously. Then he said, "Professor, if we're off course, that's *my* job."

But Smith was insistent. "You *are* off course, and within a matter of half an hour it will be too late to correct it."

Freddie's jaw set. "I must ask you to leave, Professor, if you are going to interfere."

The professor leaned forward. His eyes were almost hypnotic in their intensity. "Freddie, has your experience in the Space Service taught you to have respect for me

as a teacher?"

"Yes, of course, but—"

"Then I'm telling you now that you are off course! Set that problem up on the calculator again."

Freddie began to look pretty sober. He tried the calculator, and this time he swore soundly when the result came out different. Smith looked over his shoulder. The new result agreed with his own. Freddie began to turn haggard.

"What shall I do now?"

"As soon as you get back to Earth you will come to my office for a private course in Fixed Orbits and Trajectories, but for the present, do what I tell you."

By now Freddie was thoroughly scared. At Smith's direction, he fired two bursts from the No. 1 port rocket. The light-calibrator swung sixteen Angstroms and settled. Then at Smith's direction, he fired a quarter-burst from the No. 2 starboard jet, and they settled down to wait.

By the time the assistant pilot returned, the *Satellite* was quite plainly in an orbit about the moon.

**T**HEY flashed over Goddard Point in the middle of the Mare Tranquillitatis, with its cluster of huge other-world domes. Four times over. On the fifth run, Freddie gave a series of reverse bursts. The angle of decline was on the red line.

The receiving cushion on the pock-marked surface of the moon looked like a pin-point. The golden ball danced up and down, left and right, back on the cross-hairs. Forward velocity was low. The cushion came up. The *Satellite* hit with a jar. The pneumatic cushions took the first shock, then the hydraulics picked it up and the *Satellite* settled like a feather.

Professor Smith shook hands with Freddie, who was fervently grateful, and left. As he went down the ladder, almost floating from his less than thirty pounds of moon-weight, the tension left him and he felt limp. The knowledge of what he still had to face began to smother him, but he found Osborne and Patterson and they joined the passengers going down the ladder.

At the ground level, they stepped out onto the surface of the moon, but they were under a great dome of plastiglass that now covered the ship and contained oxygen and heat. They walked under a broad plastic canopy to the dormitory.

Yes, this was the moon. They actually were on another planet, but Professor Smith was so weighed down with the responsibility to be given him the next day that he was unable to be thrilled. And he slept poorly all night, beating old, forgotten paths of knowledge for some clue, some remembrance, or some reasoning that would give an answer to the problem.

At seventy-one-fifty, decimal time, he was called to the photographic laboratory of the huge fifty-foot reflector. Mr. Patterson met him with a thick stack of negatives and as many prints. Patterson himself looked strained and weary.

"The launching racks have orders to fire two hundred bombs at eighty-one-fifty," he said. "That's about two and a half hours. I'll leave you here. Press the button when you come to a decision."

Professor Smith was suddenly almost frantic. "I can't—"

"Never mind," said Patterson. "I know it's tough, but we didn't ask for it either, you know. Go ahead. We trust you implicitly. And of course all you can do is your best." He left quietly, his rubber heels making no noise on the wide silent reaches of the composition floor.

Professor Smith looked up at the high ceiling. It was a very high ceiling. He looked at the stack of negatives. He reached for the first print and focused it under a magnifier. Yes, he saw the spots—hordes of them. But they were so small. How could anybody tell what they were? If those were space-ships, there were enough to blow the earth apart. If they weren't—How could he tell? He looked at the tiny dots and got cold feet. How could they expect him to make a decision like that? What could he base it on?

"Hi, Professor!" said Freddie Yonnicks' voice. "Thought I saw you come in here. I sneaked in past the guard, myself. I just found your book on Fixed Orbits and Trajectories in the library. Now, in Chapter Four here, where it talks about ellipses and hyperbolas, it says the ellipse is the cheapest way from a standpoint of fuel, but the hyperbola is the quickest—Professor, is something wrong?"

The professor blinked. "No-no. No, not at all." He suddenly seemed to awaken and become very business-like. "I've just thought of something, Freddie. I know what's puzzling you—how to balance the expense of



fuel against the expense of time, and I think I can explain that better than I did in the book. But right at the moment I am very busy. Could you meet me at the library, say, in an hour or so?"

"Sure. I'll see you there." Freddie left, while Professor Smith glanced at a couple of the prints. Then he smiled and pressed the bell-button. Certainly he could make a decision. He had made one on the ship. So had Freddie made one. He could make one now, especially now that he *knew*.

**A**T EIGHTY-ONE Hundred Professor Smith was talking to the white-haired Gilbert Patterson, the iron-framed General Osborne, and their staffs.

"These are not space-ships," Professor Smith said positively. "The mechanics of space-travel eliminate that possibility." The stiffness went out of Gilbert Patterson suddenly, and he looked old and tired but relieved.

"In the first place," Smith said, "it is unlikely that the Martians have developed space-travel more than just enough to reach Earth, or we should have had a visit from them already. In the second place, at such a stage of development they would find it essential to conserve fuel. In the third place, even by hyperbolic orbit the trip from Mars to Earth would require somewhere around ninety days—I haven't the exact figures. At the start of the trip Earth would be a quarter of its orbit ahead of Mars in going around the sun; the ships would shoot past the sun to meet Earth three months later, and by that time Earth would be still farther ahead because Earth moves faster. So you see, gentlemen, the physical impracticability of the two planets' being together when Mars dispatches her ships. There can be no immediate danger."

"What do you mean—immediate?"

"The danger would come three months from now."

"We could fire the bombs now and catch them before they could dispatch their fleet," Osborne said thoughtfully.

"We're not in position now. Celestial mechanics will show that from Earth to Mars, the quickest orbit is available when we are about one third of the circle behind Mars. To be quite vulgar, gentlemen, you can't get there from here. And anyway," he said more quietly, "they are not space-ships."

"They moved at high speed," said Osborne.

"No, they move at very *low* speeds. That's what fooled us, just as the spokes of a wheel traveling at a certain speed appear to turn backward in the tri-dimensional movies. If we assume the high speeds these objects at first indicate, we must also assume that any ship of any possible metal, even pure beryllium, which is heavier only than hydrogen, helium, and lithium, would acquire too much kinetic energy to change course as these objects do.

"No, gentlemen, the speed has to be low, and even then, the only sort of object that could do that would be an insect of some sort, very light, and at Mars' gravity, about one third of Earth gravity, it might be possible for insects to grow to enormous size. We do not know what conditions there are on Mars to either facilitate or retard such a development, but in my opinion, gentlemen, these are huge beetles!"

**G**ILBERT PATTERSON was very pleased, but General Osborne looked speculative. "What about the people on Mars?"

"I think it is rather obvious," said Smith, "that these *are* the 'people' of Mars. They're highly specialized or they wouldn't have developed such light bodies. They must dig the canals with mandibles, they undoubtedly have developed a means of sending electromagnetic signals from their antennae. Why is it so astonishing, gentlemen? Did you expect something familiar?"

"Well, what do you know!" said Osborne.

"Okay," said Patterson. "Thanks, Professor." He turned to Osborne. "Cancel Firing Order One Hundred."

"You're entirely welcome," said Professor Smith. "And now if you will excuse me, gentlemen, I have to meet a former pupil of mine to discuss old times."

He strode out tall and slim and self-possessed. He seemed to be a very decisive man. And he was. He was going to coach Freddie. He was going to fill in his own education with a post-graduate course in Astrographic Interpretation under Freddie's father, and he was going to fail Richard Brambilla in Celestial Mechanics Four. With his new consciousness of the power to make decisions, he wasn't afraid of Brambilla. There *were* things more significant than salary or position.

# THE ETHER VIBRATES

(Continued from page 10)

stations—highly insulated outposts close to the star of our planet.

It is also a world of intrigue, of incredible and sophisticated cruelty, a world at war inescapably with itself beneath the uneasy surface of peace and security, a world grown so unwieldy that only the most centralized systems of power are capable of administering it.

Alar—scientist and “thief”—is the central figure of *FLIGHT INTO YESTERDAY* and becomes, as the story progresses, the pivotal figure of the Earth upon which he moves. And although he is well aware of the fact that he is being sheltered and prepared for some crucial tilt with destiny, he knows not who he is nor what role he is fated to play in the human comedy unfolding about him with terrifying speed.

He is a man walking a tightrope whose nature he does not understand above abysses whose depth he cannot pierce, walking from a cliff he can no longer see toward a destination whose nature he cannot guess. Vainly he seeks counsel—from the professors who have befriended him, from his fellow “thieves,” from the wife of the autocratic Haze-Gaunt who had apparently slain her first husband, great Scientist Kennicot Muir.

They cannot give him the answers—for they know them not. He must seek out his own strange powers, his stranger destiny, which is without end. And in his search he becomes part of a story so different from the ordinary run of science fiction, so implicitly hung with suspense and color and the excitement of human beings in crisis, that its very fabric glows with interest.

Charles L. Harness may be a new name to science fiction but he is destined to be remembered as long as science fiction is read. Let it be said now that he is a very real person, who lives in Stamford, Connecticut and wears glasses and spends his days working as an attorney for the American Cyanamid Company. He is not a pseudonym for anyone.

For our Hall of Fame Classic we have resurrected a novelet of a dozen years ago which is still remembered fondly by fans and general readers alike—*CONQUEST OF LIFE* by Eando Binder. It is the story of Anton York, who discovered the secret of

immortality, only to have it almost perverted to savagely selfish ends by a trusted assistant.

It is a grand story in the old-school—with sweep of space and danger and humanity threatened by interests it can never understand.

It is the Binder brothers at their very best—which should be enough said on the subject.

Willy Ley's second article on the road to space travel, *THE NEXT TWELVE YEARS*, will also be a feature of the May issue, along with a crop of short stories culled from an inventory that includes Bradbury, Leinster, Gallun, Temple, Simak, Loomis, Kuttner and Fitzgerald. And Rene LaFayette will be present with the next tale in his future history series on the conquest of space.

May will be very warm for *STARTLING STORIES*.

## ETHERGRAMS

**L**ETTERS, letters, letters! And just to make it tougher, the crop appears to be rather more interesting than usual. So let us away. First, a couple of postcards from which anyone who chooses may draw his or her own conclusions. The authors evidently did—and speaking of authors, the first is from one of our abler and younger contributors.

### HALLELUJAH!

by James Blish

Dear Editor: Not only do you have van Vogt at last, but I think you got the best vV yarn I have seen in some time. “Dormant” is a terrific job. There's a large body of vV's work that I don't like, but this one has a tremendous wallop.—*Staten Island, New York.*

And then this one—

### FALLING GLASS

by Joseph R. Rhoden Jr.

Editor: Just a little note to advise you that the November ish of SS is the VERY best ish which I've read. But A. E. van Vogt wasn't up to his usual high standard.—*1244 North Dearborn Street, Chicago 10, Illinois.*

Perhaps the feeling is sectional—no doubt.

## SCHOLARLY ANALYSIS

by Sylvester Brown Jr.

Dear Sir: 1948 has been a remarkable year. It has seen the blossoming of SS and TWS to man's estate. Maturity now walks with calm and measured tread through the pages of these amazingly—pardon—wonderously changed magazines. Those with eidetic memories may recall by name all the miserably-written potboilers that bubbled from the pages of these two magazines during the first half of the decade.

As a justification of one of your competitors' policies, the fact was pointed out that the gore & guts type of story with its inevitable hero, heroine, BEM, dictator, etc., although superannuated by the better magazines, was needed as a transition magazine from Adventure-Horror to high-grade science-fiction. In this light such a policy may be justified. There's a catch though. Any story no matter what its subject matter would be well-written. The stories in this magazine just weren't.

In addition any science-fiction magazine pursuing such a policy has, of necessity, a transitory reading public. If it is merely a stepping-stone to better things, this must be the case. To my mind any true science-fiction magazine cannot have such an ever-changing reading audience. It must have a fairly large backbone of consistent readers: that is what makes a magazine of this type unique.

This magazine, then, was outlived by the consistent reader, the fan. Whatever may be thought of the fans—minority, chronic grippers, egotistical, neurotic—their majority opinion is generally correct. I believed them to be correct in this case, although I thought their vituperation a bit too intense.

The above paragraphs may seem out of place in a letter to you. The point I wish to make follows: I believed that TWS and SS should also be more or less outlived because of the type of fiction they were running. Occasionally a good story—"The Time Cheaters"—but buried deeply. Perusing the first dozen issues of SS, I wondered how a posthumously-printed story could be the only gem among all those clinkers. The law of averages seemed to be taking a terrific beating. So I stopped TWS completely and bought SS only for a complete issue. Then came the clinker, CF. Perhaps interesting for an issue or two, but too hopelessly stereotyped.

I went in the Army in '42 and more or less lost all track of the field. When I got out in '45, I hopefully bought issues of TWS and SS. Unfortunately they were worse, if anything; although that might be expected due to the war. Until 1948 I bought only one issue: the one containing "Dark World." It was purchased only for the cover. Then one day I saw the March, '48 issue and thought that perhaps by some miracle an increase in quantity might mean an increase in quality. Long, whom I consider rather didactic and over-technical, pleasantly surprised with a fine job of writing on an old theme. And the shorts, which heretofore had been an absolute waste of space, seemed to be revamped. (I recently wrote you concerning this issue and asked your help in picking up various TWS; however, all have been obtained. Thanks anyway.)

Along came March, and the May issue. I purchased, hoping that the March issue had not been an exception. I found to my amazement that it certainly hadn't been. Kuttner was truly masterful. The quasi-scientific explanations added just the right amount of garnish to a terrific fantasy novel. On the strength of this story, I got out the cover I'd been saving and read the story behind it. "Dark World" was excellent, but it was not quite equal to the best effort I've seen from Kuttner in a long time. The only negative material in the magazine was Zagat's forlorn effort. Scientific-detection, with rare exceptions, is anathema to me.

Then July and Hamilton. Not as good as Kuttner but adequate—very adequate. The story did much to remove the bad taste left in my mouth by the CF stories. Nelson's change of philosophy while inhabiting the body of Asha was one of the finest bits of writing EH has done. Finlay shone; your interior artwork is unexcelled in the field. Kuttner's story was inexcusable except as a shining example of how an author can improve in ten years. Virgil gave the story another excuse for being included.

Came the September issue and Fred Brown's delightful bit of whacky science-fiction developed in fantasy style. Old idea, but novel and superior development. "Rat Race" contained a twist rarely seen. I would like to say something to Mr. Berner: "Simple Life—simple story." I think that's just what Ray was attempting

and doing a very good job of it. Am surprised so few thought so.

Then we come to the climax—not the dénouement. I hope—in the final issue of the year. In this issue appeared the finest novel Starling has printed—including all the ones I didn't read. Colossal plot, superb development, adequate characterization, tyrannical overlords, etc. absent in toto. All in all this story is a fine example of the fruition of the Editorial Ideas expressed in the Dec. '48 TWS. With more stories such as this, SS need play second-fiddle to no other science-fiction magazine extant. The same may be said for TWS, which I have also started buying again.

"The Stubborn Men," however, was very poor—the poorest story of 1948. Atavistic for the revitalized SS. Long's story was very interesting, although I think he could have done a lot more with it. "Dormant" was very good and you may feel rightfully proud in obtaining van Vogt's services. His one big fault—the only one as far as I can see—is his complete lack of epezegeis. Perhaps van feels that he has so hopelessly entangled his poor reader that no amount of explaining will extricate him. I thought that (R) was very finely developed. That pair of ten-foot pliers was a "bemy" masterpiece. Pragmell was adequate but not classic. He needs more-length to move around in! Ray didn't concentrate hard enough on his "Visitor." McInch was Vance's best to date. This scientific-detective is one of the exceptions mentioned above.

Now, if possible, I would like to comment a bit on your literature—(sic) Sneary!—letter department. Mason: TVOC minimized blood & thunder. Astra: Finlay and pornography are antithetical. Pix please.

Thiessen: You are so right. Tell the poor Editor what a dero pilot is.

Miss Lahn: How are you going to get all the different science-fiction magazines to cooperate? Or is the Oscar you are thinking of a SoScar? Weber: More than one science-fiction magazine has tried to clear up the misunderstanding ancient escape velocity. It persists, though—like out-moded theories have a way of doing.

Farnham: Custodiet is German for 'I eat custard'. Editor: I like a 3/2 ratio of science-fiction to fantasy. If possible, please use the type of paper used in Dec. '48 TWS exclusively. It is infinitely better than that used in the Nov. '48 SS.

I thank you for having read this far. I don't like people who dare you to print their letter. I think people who say the printing of their letter is a matter of indifference to them equivocate. I would like to see my letter printed; however, the main thing to my mind is that you've read what I had to say. At any rate I'll conform and end with a "poem":

Bergey is really a BEM

He is the one

Who chases his Fem,

with a brush

Of truly demonic hue.

However, those colors to him

are justly ascribed.

Editorial policy's all mafu.

The poor old BEM is circumscribed.

Bergey, that is.

Sorry.

With all good wishes to a good Editor not a bleary Sergeant S.—65 Gordon St., Allston, Massachusetts.

You'd have us write a thesis

In answer to yours

With epezegeis

Upon the allures

Of Bergey's sweet lady-BEMs

Since they're always sans corset,

These houris he limms

All our customers set

Their luminous glims

On their myriads of charms.

And buy the magazine—we hope.

In the letter that follows, we are breaking a rule and not listing the author's name—for reasons which shall presently be obvious.

Nor are we giving an address. But if anyone who reads it wishes to correspond with the author, we wish he'd enclose his letter, envelope, stamp and all, in a message to us—The Editor, STARTLING STORIES, Suite 1400, 10 East 40th Street, New York 16, New York. We'll be glad to forward it to him.

## ANONYMOUS

Dear Editor. Do you have a free few minutes to spare for a young guy who comes seeking a favor? I read my very first copy of a science-fiction magazine over the weekend and it was certainly Startling. The magazine came to me in a round-about manner. The stories will take some getting used-to but I'm sure I'm going to like them. I was most interested in the letter department though. The chatter absolutely fascinated me.

I've been in the States since I was 14 (I'm 22 now) but I haven't yet become used to the way people here throw the language about. Perhaps because I see so few people. I'll tell you about me and then ask my favor. Is that all right?

As I said—I'm 22. I was born in Ireland—one of eight boys—no girls. When I was eleven I got tangled up in the craziest accident you could imagine—it began with a tomcat, my Dad's straight razor, a 700-year-old monastery, a bird's nest, a shepherd and some racks. It ended with a broken back, several broken hips, knees, etc. etc. I haven't walked since then. I grew tough—gosh yes—I'm six two and a half—and have dark brown hair and eyes.

I live with a married brother and his family. He is very strict and sometimes—well, I guess it's not the easiest thing in the world to be saddled with a guy my age who has to be helped in and out of bed and wheel chair. Because of his dislike of visitors, we never have company except for my other brothers, who live near by. He and his wife are frequently away weekends, leaving me pretty much on my own, and sometimes I feel like crawling behind yellow wall paper—only we ain't got no yellow wall paper.

When I read all those wonderfully crazy letters at the back of your magazine I suddenly thought how wonderful it would be if I could have some—for me—alone. Do you think any of those lovable loons would care to correspond with me? It would be wonderful if I had lots of letters to write on those endless weekends. I don't want my name printed on account of my brother—as I would have to be shipped to the Moon for safety if he heard of it appearing in a science-fiction magazine.

While I'm no science-fiction expert as yet, I have always read things other people have thought strange. I've been reading the folk lore of my country since I was old enough to read. I don't mean fairies and banshees—I mean stories about the ancient "heroes" and such. I can discuss books, music, sports, travel and I guess that's all. My writing isn't too good as I've only been able to use my hands again for the past two and a half years and had to be taught to write all over again. I'm not looking for anything but friendship, so please don't suspect me of any "romantic" or other ulterior motive. I do so desperately need friends and, with the family setup, I can't have friends visit me except by mail. That's all. I'll be hoping—and even saying a prayer or two.

Well, gang—how about it?

## NO LUCK NELLIE

by Kenneth F. Slater

Dear Editor: The November STARTLING has arrived, and that calls for a letter! Bergey on the cover. I suppose that can't be helped—he has got you under contract, I guess. How much does he pay you to publish his paintings? Honestly, he is not so bad, but I do wish he and the author would get together some time. I can't fit that shemale and Seranis together at all.

But Clarke's AGAINST THE FALL OF NIGHT. Some story, some story. No complaints at all, at all—some one suggestion—a sequel, maybe, uh, Mr. Clarke?

And the rest of the stories I liked too, 'cept for Frank B. Long's thing. Sorry, but I thought that was puerile. There is one thing—don't let Jack Vance wear out his theme too quickly. After a time it gets too, too—er—can't think of the word, but the same applied to St. Clair's Oona and Jick stories.

Book Reviews, no less! The only trouble with you folk printing book-reviews is that by the time the review appears I've read the book, and couldn't care less. . . . But that is the unfortunate part of your printing schedule, I guess.

Yep, quite an 'ole for those fancies this time—and made it! I am rather uncertain whether an encouraging review in the 'B' list is to be preferred to a slanging in the 'A' list, but I suppose so. Maybe. Letters. Quite a furor over SOMA. I could pun, but I won't. But thanks for the hints, fellows, I did not bother going any further than fantasy for my stuff—I could have looked in a dictionary, and I have. They seemed to vary as much as the various other folk mentioned. So I'll stick to my original statement. As far as Fantasy goes, BRAVE NEW WORLD has the earliest mention I can trace. Anyone seen anything earlier?

Now the only folk I intend to address some remarks to are Es and Les Cole—Look you here, Les. There is an 'ole in Es' little plot-plan-or-what-have-you that you could call Skykirk III thru. If the laws of probability lay down that a universe must exist in which a time machine is invented, and that of the many universes in which time machines are invented, one of 'em is gonna visit our universe, well, you must remember you are speaking of probabilities, and the equal and cancelling probability is that there must be a universe in which NO time machine is invented, and a number of universes which are not visited. You can stretch this into a nice little paradox by saying that in a fan-shaped time system covering all possibilities there must be a universe in which a time-traveller exists who visits all other universes, and at the same time the universe that is never visited must exist. This is of course following the basis of travelling crossways in the fan shaped time system, which is your analogy. Someone else can take it up from there, I am getting dizzy! But at least, I think I've pointed out the hole. Maybe this is the universe that never gets visited.

Now, Mr. Editor, I think I mentioned in a previous letter to you (in the guise of TWS Ed.), that I had a nice lot of correspondence arising out of my letter in TWS Oct. issue.—I have personally answered every letter received except one! A little lady named Nellie McClennings, of Kansas—the only address I could find was 'Just Luck, Kansas' and that address doesn't seem to have found her. . . anyone know the lass? Or are you reading this, Nellie? Send me the address, if so, please. Dankesehr.

I guess that about concludes this epistle, except to offer STARTLING congrats on its tenth birthday, which probably occurred the issue before this letter gets printed—If it does! But soon you will be as old as me fren' Mike Wigodsky—but then he'll be older, won't he? Or is it your bigger he grows?—Riverside, South Brink, Wsbech, Cambridgeshire, England.

We have combed the office atlases for vestigial traces of Just Luck, Kansas, to no avail. Do you suppose our Nell was pulling a swift one, throwing a curve or what-all?

Yes, you missed the anniversary issue by one—but thanks for the congratulations anyway. And thank you and the entire British fan movement for keeping us so closely informed as to your activities. Re the November cover—Arthur Clarke has written us aren't it. Apparently it caused him nearly to do an ophidian act and jump out of his skin. And we rather liked it—oh, well.

## DAZED AND NUMB

by Barbara Ann Lahn

Dear Editor: I am dazed—numb! "It" was on the November cover. Oh, Bergey—what have you been eating?

Now I have always thought that the cover was, so to speak, the bait for the zine, it appeared on. The July cover made me wonder, "What story is inside that makes buildings look like tires hauled out of Mrs. Murphy's chowder?"

My ever-present curiosity aroused, I bought my first ish of SS and have been very pleased with some ever since. This (the November) type of cover would scare away any prospective readers instead of snaring them (there are a few poor souls who don't know of the delights to be found within).

Rover Boy is bored almost to yawning and the gal is screeching as usual. I know if some BESM (Bug-Eye Monster) soared into the ether with me in its claws, I would let out a yell that would be heard, not submit without so much as a whimper.

That eye! Those tiny eyes! The more I looked at it the more horrible it became. 'Tis true, I have not been quite able to overcome my horror of such things, even after a year of science fiction. Don't feel too badly, Bergey. I know you're only earning your paycheck—but I couldn't bring myself to like that BESM.

The reason I am yelling so about the cover is because I have nothing else to gripe about. The HoF was really swell.

So your January ish marked ten years in the bloody field of science fiction. Well, my sincerest and most heart-felt congratulations, even if I am a new reader of SS. I am here to stay and even though I disagree with some of your stories, stay I will! Ditto for TWS.

But please, Bergey, no more eyes.—Bristol Pike R. D. No. 1, Croydon, Pennsylvania.

Okay, Barbara Ann, the eyes have it! We'll send Bergey a memo.

## HALP! HALP!

by Jim Phillips

Dear Editor: Please don't improve STARTLING anymore. If you do I'll probably get kicked out of school. Look what your November issue did to me!

I started on it in study hall. Furtively I pulled it out of my notebook, covering the Bergey cover with a practised palm. Soon I was engrossed in AGAINST THE FALL OF NIGHT. The period ended ten pages too soon. I was too deep into the Clarke tale for the bell to penetrate. A black shadow fell over the paragraph I was reading. Cautiously I raised my head. Then I wished I hadn't.

The study hall teacher was glaring at me. "James," she said (it's always James when she's mad at me) "get out of here—at once."

Now I never argue with her if I can help it. I muttered, "Yes, ma'am," gathered up my books and started to leave. I glanced back as I left and was sorry. There was foam on her lips, her eyes were wild. Alas, poor soul, she just couldn't withstand the mind-sapping yellow Bergey background. I rushed on to class with a shriek pursuing me.

Nothing more happened that day—but next day's study hall—*whew!* Better not tell it. I can use it in a horror story.

Seriously, this was an excellent issue. Only one poor story—THE STUBBORN MEN—which was too short and much too confusing. I don't know whether Clarke, van Vogt or Long cops the honors. Let's call it a three-way tie.

A final word about Clarke's tale. Obviously he has the materials for a sequel. Let's have it.—704 East Pienkishaw, Paola, Kansas.

Poor Jim—he has our sympathies. We remember being similarly caught in a study hall session in a sub-prep boarding school. But we couldn't escape and go home. As for the Clarke sequel to ATFON—we only wish we could find time to write one. Maybe he will some day.

## SHE VOTES FOR

by Elva L. (Mrs. A. J.) Kaputa

Dear Editor: First I want to tell you how much I like STARTLING STORIES. I read all the science

fiction and fantasy I can get my hands on but I really believe like SS ven a smidge better than THRILLING WONDER STORIES. Arthur C. Clarke is a writer after my own heart. I did like "Against the Fall of Night" very much. I don't know who did the illustrations but they're good. Who did you say did them? Again Bergey worked with the interior artist to get the details identical. Hurrah for whoever started that.—Box #49, Harrington, Wash.

Such cooperation, collaboration or what have you has been going on for quite some time now—in fact, ever since the magazine was started. The covers do not always illustrate directly the stories from which they are conceived—but they are supposed to symbolize same at any rate. As for the "interior" artist, that was Verne S. Stevens.

## ANGLOVIEW

by Neil C. Gourlay

Dear Sir: Comments on the November STARTLING—congratulations on the tenth birthday. I have read your magazine from Vol. 1, No. 1. "The Black Flame" and the other novels of your first year were supreme. Indeed, during your quarterly days, it was hard to believe you ever had reached such a standard. However, from about the time of "Valley of the Flame" in mid-1946, the quality of the stories has improved. 1947 was your best year yet. Though 1948 was not quite up to the previous year, it maintained a high level.

"Against the Fall of Night" was a good first novel from one of Britain's foremost science fiction fans. The idea was certainly not new but the freshness came from the author's style. Any author who can rekindle that feeling of suspense and anticipation I first felt when I went exploring with Captain Nemo in the Nautilus or tramped the deserts of Barsoom with John Carter deserves praise.

"The Isotope Men" was very good in 1933 but not exactly first-rate science fiction today. "The Stubborn Men" was passable. "Humpty Dumpty Had a Great Fall" was a bizarre, well-written piece of science fiction—very enjoyable. Interesting theory of the inherent cruelty of fairy tales and nursery rhymes. However, aren't most nursery rhymes just parodies of political satires of the past? For example, the well-known "Mary, Mary, Quite Contrary" started as an attack on Queen Mary of England at the time of the religious persecutions in 1550.

"Dormant" was typical van Vogt and therefore quite good. "Ring Around the Redhead" was the same, while not van Vogt. "The Visitor" was excellent—the best story in the issue. In fact, too good for science fiction (let's have that again—Ed.). The Mars setting only limits its public. I advise Bradbury to try to write more in the Henry James manner, with known surroundings and emotional problems to solve. He may well become one of the greats of American literature—but only if he gets away from science fiction. Remember, H. G. Wells will be known a hundred years hence for "Kipps", not "First Men on the Moon".

As for "The Unspeakable Melinch", unspeakable is the word. On the whole, a good issue.—54 Grosvenor Drive, Whiteley Bay, Northumberland, England.

We'll take issue with you on Bradbury. In the first place, if an author finds his imagination more stimulated by bizarre than familiar backgrounds, he should stick to the bizarre if he can hurdle them—which, we feel, Bradbury can. As for his writing like Henry James—he's a far better writer than James in his least subordinate-clause days. Let him develop toward maturity along his own lines.

Wells will never be known in lasting literature for his science fiction stories, excellent

as they were, for the simple reason that he was, when writing them, invariably preoccupied with ideas rather than characters. Bradbury's men on Mars and what-have-you are as vividly alive as Wells' "Sleeper" and others were cardboard automatons. Think it over—you may see the difference.

As for the nursery rhymes, you are to a certain extent correct. "Mother Goose" in particular, we believe, was based on political satire. But this fact does not detract from the basic savagery of the children's fairy tales of yore. Even Lewis Carroll had carnivorous overtones.

Perchance you may not remember a couple of silly items that were around some ten years ago. One went—"Mistress Mary, Quite Contrary, how does your garden grow? With silver bells and cockle shells and one lousy petunia."

And then there was, "Hickory, dickory dock, the mice ran up the clock. The clock struck one—but the other was uninjured."

Had enough?

## REBUTTAL

by Corporal Omer A. Fournier

Dear Ed: This letter is indirect rebuttal to the one written by Linda Bowles. She seems to dislike that last issue of yours. What's up with this woman? Personally I thought it was swell.

I somehow hope that someday I will see a story to match one I read in Germany called "Road to Glory." It was an enormous volume, packed with the tales of the Kargha-Kan, who was immortal and who traced our wanderings to the extinction of the human race in a series of stories dealing with future history and invention.

Does anyone happen to know where I can pick up another copy? Mine was stolen while coming home from the ET. It was published by Gootfried & Son in 1921 in Munich.—AF19233806 USAF, Ward #15, Station Hospital, Lacklan Airbase, San Antonio, Texas.

We can't seem to find "Road to Glory" listed in the Checklist of Fantastic Literature, Omer, which is the only reference we have handy. I hope some among our other readers can give you an assist. Thanks for writing.

## BACK AGAIN

by Rick Sneyry

Dear Editor: Well the first of the 25c size SSs is out. And I hope that all thos to come will be as good. Or atleast the parts that wre good. I agree with thos who said the cover reminded them of the 1942 covers. Glaring yellow back ground, with a robot steeling away the hero (that is a switch anyway.) Say, and who said the robot had legs and arms. Clarke just said it had eyes and tintacals. . Pook on Bergey. .

But while speaking of Clarke, take a bow (not to far you dope, what to fall on your face) for finding him. . AGAINST the Fall of NIGHT was the best novel you have had in yore pulpy old mag in over a year. . Way back to about THE STAR OF LIFE. . This was the first one that I didn't put down hafe a dozen times in booring spots, and was sorry to see end. . No kidding after the fantasy junk copied from the

dead past and Merritt you have been dishing out this was like a breth of cool air. . Not that it was a new idea, but then who expects that. . I'm talking about the dept, the feel of the story. . Clarke made it live. . . Even if his people looked about as alive as wooden Indians. . . . Speaking of which, I think he got the wrong cast. . They seemed more like people of about the year 2057, than something like 13,000,000,000,000,000 A.D. . . I hope people will change a little more than that in that length of time. .

One thing that made it really outstanding, or rather two. . Not one person died a vilent death, and there wasn't one herolan, other than Theon's mother. My we see more of Clarke, if he can do more like this.

The idea to reprint in pocket book form some of your older classics sounds good. . You have a lot of good ones back there. . How about the Weinbaum stories.

Say, no one was speaking about it, but remember that hot idea you had about reprinting stuff from fanzines. It feel through because you didn't get anything you thought you wanted. . Well you know what the trouble was. . It was all slanted the wrong way. . No mater what it is, everything is aimed to please the people that the writer thinks will read it. . So, why don't you put out a zine. . Say four pages. . Use both fiction and articles. You can get some good book reviews for free I bet.

Limits it to fans who haven't sold anything to the pros. . And award a prize of say 5 bucks to the best peice each issue, and say \$2, to a duner up. . As prizes they wouldn't distroy their amature standing. Ofcourse you might have a hard time without Keller, but then you might try getting him to wrie professionally. . One thing, you could add fandom too. By turning over everything you couldn't use to the N.F.F.F.s Mass. bureaus. . Why, posh., you could nodoubt even get Kennedy to do the ground work. . Oh well. . I like to get ideas, even if no one listens to them. .

No luck with Fances Keyser. . She came over to see me once and then moved up-state. . Oh well, she was married. . But then I'm a hermit anyway.—2962 Santa Ana st., South Gate, Calif.

But not a hermit crab—we hope. You want us to publish a fanzine? Rick, you're asking for it. How would we ever get the prozine out with all those fans around? At that, we'd rather you asked for it than we. There'll be more on the reprint idea later. Glad you like AFTON. We did too.

## RHYME OR RIME?

by Shelby Vick

Dear Ed:  
 "The time has come,"  
 "The Librarian said  
 "to talk about s-f,  
 "Of Humpty D.— which  
 weren't so hot—  
 and everything that's left.  
 There's Isotope Men—  
 Hall of Fame  
 The author's different  
 story the same.  
 "Dormant" by  
 Van Vogt stood  
 Above the others—  
 it was good.  
 As for "The Stubborn Men" I'm sure—  
 "What could rhyme with 'sure' but 'poor'—  
 "Against the Fall of Night" was fine  
 "Let's have more along this line.  
 "Ring 'Round the Redhead"  
 old but good  
 That was some ring  
 in which the redhead stood.  
 The other two, I haven't read—  
 (wish Magnus Ridolph  
 hadda stood in bed.)  
 Just Hercule Poirot  
 in some future day  
 Minus mention of  
 little cells of gray.)  
 Someone said that  
 Bradbury's morbid.  
 Well, at least, he  
 isn't sordid.

T E V

thank a lot  
 You published my letter  
 tho it wasn't so hot.  
 One issue almost  
 poem free—  
 Should that be a  
 hint to me?  
 Still, I've done it  
 and I'm glad!  
 Even tho  
 the rhythm's bad.  
 All the way thru  
 and still a pome.  
 (I'm nearly done with  
 my little tome.)  
 If you my mistakes  
 will forgive,  
 I'll try to forget  
 When the Earth Lived.  
 Now, that's a good bargain;  
 an even swap.  
 So I guess I'll hafta  
 close up shop.  
 Please put up with  
 all us boor  
 Until next time.  
 Sincerely yours,

—411 Jenks, Panama City, Fla.

Dear Boor—we say, and mean it too  
 Just now we've had enough of you,  
 A pome, as if you didn't know,  
 Is fruit that apple trees do grow—  
 A poem's something else again,  
 A rhythmic outgush birthed in pain,  
 Or pleasure or in rev'rence solemn,  
 You'll not find any in this column.  
 But take not this to heart too much,  
 Write us again, you such-and-such.

S.O.S.

by L. F. Nunn

Sirs: This is an S.O.S. from "darkest" Africa. For some time I have been reading STARTLING STORIES amongst other science fiction and I cannot understand why you print this magazine only once every two months. In my opinion SS is the finest magazine of all. To get back to my first statement—it has long been difficult to get SS here, owing to the dollar shortage and now the supply has stopped. I wonder if any of your readers have any copies they have finished with. If they would send them to me they would be helping to lighten a corner of the so-called "dark" continent. I would be glad to return the favor in any way possible—if you find some good Samaritan amongst your readers. In the meantime, keep up the high standard of your magazine.—P. O. Box #537, Bulawayo, Southern Rhodesia.

Wanted—one or more Samaritans—Ed.

DOWN PENINSULA WAY

by Rose Davenport

Dear Editor: I have been a fan of STARTLING STORIES for seven years now but this is the first time I have written a letter. I just finished AGAINST THE FALL OF NIGHT by Arthur C. Clarke. It's 4-0 by me. I couldn't lay the mag down until I finished it. I hope Mr. Clarke will write a sequel.  
 Your magazine keeps improving all the time. THE ISOTOPE MEN was very good. A new idea on the origin of man. Worthy of being a HoF classic. DORMANT—good. Very different. Van Vogt is always a top hand. In fact, the whole issue was darned good. Excellent in every way.

I would like to get in touch with some other SS fans in San Francisco or down the Peninsula. I am a lone star at present and will welcome any and all. Maybe we can start a club or something.—137 Cherry Avenue, South San Francisco, California.

We thank you, our father thanks you, our mother thanks you, etc., Rose. And may all your fanzines—whenever they appear—be little ones.

## SILVER THREADS AMONG THE EDITORS

by Ann Callanan

Dear Old Editor: I've been reading science fiction and the like for about two years now and this is my very first fan letter. I just can't keep still any longer about Ray (genius) Bradbury. He's wonderful!!! How about slipping in an extra page next issue with his biography?

"The Visitor" wasn't up to his usual A-plus number-one ippy-pippy Yankee-Doodle style (I suffer from Peter Donalditis) but it was pretty good at that.

Will you tell me why Bergey always bedsacks the covers with blondes? Was his mother frightened by a peroxide bottle?—353 West 44th Street, New York 18, New York.

No—it was white henna.

## INTO THE FLAMES

by Chad Oliver

Dear Editor: And still they come, for which Ghu be praised. Do you realize that there have with the November issue, now been a total of fifty-three issues of *Startling Stories*? Allowing four hours per issue reading time, that means that we veteran followers have spent some two hundred and twelve hours of our short lives reading your magazine—or about nine full days. Gad, I can hear it all now . . . And what did you do during your life, old man? I read *Startling Stories*, sir. Cast this one into the flames—

But enough of deep philosophy; leave us turn to the business at hand. *Against the Fall of Night*, by Arthur C. Clarke, was a good, solid novel, and I enjoyed it a lot. It had a number of unusual angles, I thought—notably the lack of a heroine. Oh, thank you, noble editor, THANK YOU! I particularly liked the notion about how different the reality is apt to be from the legends which it inspires. That, I believe, is very true. The whole thing was quite refreshing in plot and treatment. More?

Van Vogt blushing made his debut in SS with a good 'un, but I'm a leetle partial to Bradbury's *The Visitor* in the short story department. Man must ever destroy his dreams with his greed, it seems. All of Ray's stories seem to go so much deeper than the average stantasy tale, good as that average has been of late. They have a meaning quite beyond the immediate demands of the plot. If anyone is giving gold medals to authors this year, Bradbury wins my nomination by four racetracks.

Williams' fable was good. I found the combination of Long and Mother Goose a trifle difficult to swallow—my epi-glottis, y'know. But Long has shown such terrific improvement of late that there are certainly no kicks from here. It wasn't very long ago, I recall, when he was inflicting John Carstairs, the Botanical Detective, upon us. Speaking of sicuths, I see that Mastus Ridolph has felled the garbage man, Goody! Jack Vance obviously has considerable talent; I wish he would focus it upon a more worthy subject.

On the inside plex, I plc Finlay. The portrait of Alvin on Page 15 is cute, but he's the first kid I ever saw who had his mouth blandly reposing in his right cheek. Ain't the future wunnerful? Think of the advantages this entails. Go ahead, I dare you. The cover was a nightmare in red and yellow, or have you heard? (Yes, we've heard—Ed.)

The features were all fine. Thank you for your kind words anent THE MOON PUDDLE. To you, sir, THE MOON PUDDLE AWARD! We are sending you, under separate cover, some evaporated water direct from the original Puddle. Simply add water and dixie-cup, drink and you will be a new man. Who, I can't say at the present time.

I do dearly love TEV. Such fascinating people, don't you think? I particularly enjoyed the offerings from Zimmer (I am sure she must be more attractive than

Berger's Babes; who isn't?) Sneary the Superior Slan, Barbara Lahn, the Coxes, Hallburton, Pace—dammit, they were all good! The book reviews were excellent.

Let Darkness Fall would have been a better title for the renaissance novel! This issue—too bad that L. Sprague de Camp beat Clarke to it. Hmmm. I note with some apprehension that next issue Henry Kutner is going to write a yarn under his own name. Hang on, men—anything may happen!—Harper Star Route, Kerville, Texas.

You have us thoroughly confused as to our identity of the morrow—Chad. But Alvin's cheek is easily explained. Did you ever see a picture of Johnny Sain, the Braves' star hurler? Alvin too chewed old-shaggy.

## WHO ARE YOU-ALL ANYWAY?

by Thorne Runyan

Dear Sir: Long a passive reader of *STARTLING*, I have just about come to the end of my tether! In perusing the contents of the letter department of your November issue, I come upon personages who, in the style of a hundred long dead, whose style should have been interred with him, attempt to invoke the muse of humor with flagrant mis-spellings. AND THESE PEOPLE TRY TO CRITICISE YOUR MAGAZINE AND YOUR CHOICE OF ARTISTS AND AUTHORS! These people, when not ghoulishly at work interring the fragile bones of the English Language, while away the time in breaking every sacrosanct rule of poetry. There is such a thing as poetic licence, but their assaults border on the Iestonic!

Perhaps it is best for me to back-track for a moment, and explain this sudden vituperation upon the heads of the fanatics which patronize your magazine. By saying I was a passive reader I meant that I read your magazine, and nothing more; that is, I never wrote a letter, put out or read no "fan-mag," and discussed the magazine very little with my friends. But even the most peaceful creature can be stirred by continued and successive irritation.

First, allow me to launch a defense in favor of Eric Berger. An artist and cartoonist myself, I can appreciate his use of coloring and shading. Although no Virgil Finlay, he IS good. His only weak point seems his inability to portray real fear, hate, and surprise on the faces of his characters. I doubt that he has ever seen any of those emotions in all their stark reality—for, once seen, they can never be forgotten.

Now I must throw up a defensive screen for the editor's choice of authors and stories. To make a magazine economically feasible, it must cater to a wide variety of tastes, mores, and sphere of interests. So don't grouse so loudly when a particular story or author fails to titillate your particular fancy.

Now the hall of praise opens its majestic door! I notice, with approval, the silent encroachment of the science of semantics into your literature. The faster humans get the idea of thinking semantically, the longer the race of Genus Homo will grace (?) the Cosmos. I cannot remember who said these choice words: "More and more people in the world are reading, writing, talking, hearing, feeling life; when will they start thinking?" but, your magazine is slowly, but surely, kicking the thinking machinery into action. The main trouble is that you serve a relatively small portion of humanity.

Since I am essentially a scientist (Psychology Major here at Duke U.), I will attempt to classify your stories in a scientific manner. The first Number after each title is its plausibility quotient, then the second is its entertainment value in percent over the other stories, one issue being 100%.

AGAINST THE FALL OF NIGHT,			
A. C. Clarke.....	50%	....	30%
The ISOTOPE MEN, F. Pragnell.....	0%	....	0%
The STUBBORN MEN, R. M. Williams.....	100%	....	10%
HUMPTY DUMPTY HAD A GREAT			
FALL, F. B. Long.....	99%	....	5%
DORMANT, E. VanVogt.....	100%	....	40%
RING AROUND THE REDHEAD.			
J. D. MacDonald.....	75%	....	2%
The VISITOR, Ray Bradbury.....	100%	....	10%
The UNSPEAKABLE McINCH, J. Vance.....	80%	....	3%

100%

These percentages for plausibility are based on possible basis in fact.

VanVogt sure knows what he's talking about, and his story rates the highest entertainment quotient. His stories are characterized by an almost poetical and surprising ending.

That ISOTOPE MEN!!! No one can be exposed to such loads of radioactivity, and survive. Not even inhabitants of that planet could live on an atomic generator without tons of shielding!!!

The STUBBORN MEN had an almost poetical quality resembling VanVogt's.

"Against the Fall of Night" has such a low plausibility mark because the council, being older men would subconsciously, if not consciously, refuse anything told by Alvin which would threaten their seniority. The mere fact of Alvin's challenging the council would have been the utmost insult to their ego.

The others, I feel, need little or no explanation, so I will not defend my choices. Other people may like the stories I rated low better than the others, as people vary. As for me, the issue, as a whole, was a very well put-together issue, and I concur with Mssr. Wm. Thlesen in his statement that the magazine has improved 100% in the last three years.—Box #4074, Duke Station, Durham, North Carolina.

Okay and thanks, Herr Runyan—but somehow I misdoubt you have put our more crappulous critics to final rout. But you get credit for a nice try.

If you can so accurately define entertainment values, you should be in Hollywood, giving the movie maggots an assist. Wouldn't they like to know! But go easy on your misspelling accusations. We had to make a few corrections in your epistle. Poetic "licence" is not spelled with an "s"—also, it is "consciously", not "conclously", "seniority", not "senority", "challenging", not "challenging" and "concur", not "concurr".

We're asking Sneary to send you his spelling lexicon. Tsk, tsk!

## SILVER LINING

by James R. Gray

Dear Editor: "Shut your big, fat Startling," my wife said, "and listen to me. You're too old to read that stuff."

Regretfully I put down the November issue and argued that, if life begins at forty, I was then only six days old. This made no impression, so I began writing a letter to the editor.

My wife looked over my shoulder. "Is there any point in these letters?" she asked nastily.

"My good woman," I said haughtily, "I'll have you know all us fans put a lot of deep thought into our missives. We follow a well-planned system. First, we carry around a notebook, putting down clever ideas as they occur to us.

"Then two months pass and *Startling* hits the stands. We snatch it and rush home. We read the letter section and look at the pictures. No need to read the stories; we just say they smell and let it go at that. Of the illustrations, we say that the artists are obviously slipping. We always pan the cover pictures. We end up by making insulting remarks about other letter writers."

"So you mail your letter to the editor," my wife said. "Then what happens?"

I saw her adjusting the small lie-detector on her wrist, so I answered sullenly. "The editor probably throws it into the wastebasket."

Coolly ignoring her, I went on with my letter. The lead novel (I said) is the most absorbing thing *Startling* has published since Weinbaum's "The Black Flame." Van Vogt's "Dormant" was powerful and satisfactory. But this author isn't at his best with short stories, good as they are. He really gets going with his long novels. Get him to write us one; then you'll



get nothing but letters of praise—and you'll think you've gone nuts, SF fans being what they are.

Hof novel, I thought, more interesting than its predecessors. Blurb says, "A classic reprinted by popular demand." Just who are these guys that keep demanding reprints? "Ring Around The Redhead," was splendid; hit me just right. Refreshing, Wonderful, I liked it. All the other stories ranked lower with me than those mentioned above, but all were good. Not a poor story in the lot. All in all, I reluctantly admit, a nice issue.

I become more cheerful, though, as I think of the cover. I didn't like it. It was well drawn. The gal and the guy look all right. But that mechanical BEM is unpleasant looking. Ruins the whole thing. I'm serious, believe me. Oh yes, and I have another gripe. The staples are too short, or something. My copy came apart on me. Those staples must have been made for the mag when it was thinner.

Haven't space to answer all the letters in TEV. But must curl the upper lip at Boyd and Wickenden. They ask, in effect, who wants to see hardtonged girls? Hahl Line forms to the right.—Box #204, Hartsborne, Oklahoma.

We are most grateful to discover ourselves listed as a "staple" product!

## THAT SAME OLD ENIGMA

by Helene "Frenchy" Ward

Dear Editor: I just had to write. I think you now print some of the finest stories in your SS and TWS magazines. Your stories are the best in the field, but your covers are the worst. The very first thing I do after I buy your magazine is to tear off the cover and toss it into the nearest trash container. I long ago gave up trying to explain to friends and relations why I read "that silly trash".

The main purpose of a magazine cover is to attract new readers, isn't it? Glaring, clashing colors, horrible monsters and almost-naked females scare away the very type of reader who would most enjoy science fiction. I shall continue to buy your magazines, no matter what kind of covers you put on them, but I think you are frightening away potential customers by the scores.

That idea about a Popular Library anthology of science fiction is wonderful. I'll be your first customer.—2500 1/2 Huntington Avenue, Newport News, Virginia.

Sorry, "Frenchy," we still like those covers that give you the shudders. But thanks for having sufficient interest to write and tell us.

## NON-DRUNKEN TERRORS

by Alfred G. Kelley AC3

Dear Ed: If you had told me four months ago that I would be writing to you the result, no doubt, would have been disastrous indeed. The whole thing started around four months ago while home on leave.

My friend, and an ardent fan of TWS, Ed Cox of Lubec, Maine, which is also my home town, showed me a copy of TWS and one of his letters printed in that issue. That was the beginning.

My first impression was that he was a little daft as the cover, if typical of the contents, looked like the handwork of a madman, to say the least. I jumped the gun though for since that time I have read numerous stories between those covers and I am now one of that daffy group myself. Contrary to my first opinion many of the authors have some remarkable ideas, and now I find myself eagerly awaiting each month's publication. Am even getting a few ideas for a story of my own, of course I doubt if I could ever attain the effects of those past masters of the art but lots of fun to be had trying.

I am no critic myself but will endeavor to give you my opinion on November's issue of SS.

Cover, I've never had the drunken terrors but I have an idea of what they are like, now. Must say that's a nice work of art in the lower right hand corner, though. Why do they always have to be screaming and terrified? The monster, or is it a tin can with someone's glass eye in it, should start an eye bank. No shortage there.

[Turn page]

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Against The Fall Of Night. Wonderful, and if all of his stories are like that you have a new fan.

From observing the letter section I think I had better wait until I have read a few more issues before I make any other comments. Reason . . . they all seemed good to me.—Operation's Tower, N.A.S., Patuxent River, Md.

We might say you were caught in the daft—but on second thought we'd better not. So we won't. Send along your yarn to us when you get it finished. We'll look forward to its dissection.

## OUR FAVORITE BEM

by Georgia Bartholomew

Dear Ed: There have been many times that I was going to write in to TEV, but I always had to put it off. This time I am going to get this one into the mail if it is the last thing I do.

The last straw was that cover pic on the Nov. ish! I had high hopes that we were going to be rid of that BEM, but it looks like I was all wet. Talk about Bug Eyed Monsters! That thing on the cover had enough eyes to take care of half a dozen monsters. Please, pretty please, no more like that. All I can say for the girl is "a typical Bergey". Nuff said.

Comes now the stories: No. 1: Against the Fall of Night, by Arthur C. Clarke. One of the best novels that I've read in sf in a long time. This certainly calls for a sequel I think. No. 2: Ring Around the Redhead, by John D. MacDonald. I can't quite place this author, but I like his style. No. 3: The Unspeakable McInch, by Jack Vance. His Magnus Ridolph series is among my favorites. More please. No. 4: Humpty Dumpty Had A Great Fall, by Frank Belknap Long. Very interesting reading. No. 5: The Visitor, by Ray Bradbury. I don't think that this is up to his usual stuff. He has written much better. No. 6: The Stubborn Men, by Robert Moore Williams. All I can say is no more like this Mr. Williams. Please!

The Hof story was good as always. That is, almost always. The Lookpe Men is the best that I have ever read by Festus Pragnell.

The inside pics were all good, so I won't say any more about them.

Of course the best feature of the book as always is TEV. It is even better since it has been enlarged. Hope it stays that way.

I sure would like to find some fans to write to and exchange opinions with. I love to write letters and if they were about my favorite subject, ie: sf, I could really let myself go. I can promise to answer all letters as soon as received.—745 Haight St. #9, San Francisco, California.

You'll probably get them—correspondents, we mean. The almost continuous assault upon our favorite cover BEM leading the November issue is rapidly reducing us to a state of traumatic shock. Dammit, we liked the little beast!

## ANTHOLOGY, PLEASE!

by Samuel John Sackett

Dear Editor: Since the company which puts out your magazine also puts out the Popular Library series, why don't you get together? Your magazine and your sister magazine have printed some rather fine stories and, I'm pleased to note, are continuing to do so. You have enough of a selection of recent stories to put out an anthology of science fiction under the Popular Library imprint and, in addition, some books of short story collections by the various authors whose work has graced your pages. Perhaps one Popular Library book could contain two of your short novels.

I'd like to see Popular Library print (1) a sf anthology from the pages of Startling and TWS; (2) a book of short stories by Henry Kuttner; (3) a collection each of Edmond Hamilton, Murray Leinster,

Ray Bradbury and George Whitley, all authors you have printed probably in quantity enough to fill books of their works from the pages of your magazine. And between sf and the crime stories appearing in Mystery Book you should be able to get a collection of Fredric Brown.

Your choice could be made from the vote of your readers, if you wanted to go to that much trouble. I have some nominations myself out of the most recent copies of both magazines and others on your chain; but since I'm a recent fan my knowledge doesn't go back enough in time to make good choices with perspective. Here they are, for anyone who's interested:

Kuttner: CURSE OF THE COBRA (ThMys Sept 42), TROPHY (TWS 7 43), SWORD OF TOMORROW (TWS Fall 45), WALKER OF THE FLAME (SS Mar 46), THE DARK ANGEL (SS Mar 46), THE DARK WORLD (SS Sum 46), CALL HIM DEMON (TWS Fall 46), LANDS OF THE EARTHQUAKE (SS May 47), DON'T LOOK NOW (SS Mar 48).

Hamilton: THE ISLAND OF UNREASON (SS Spr 45), THE MAN WITH X-RAY EYES (SS Sum 46), COME HOME FROM EARTH (TWS Feb 47), TRANSURANIC (TWS Feb 48).

Leinster: INCIDENT ON CALYPSO (SS Fall 45), THE DISCIPLINARY CIRCUIT (TWS Win 46), DEAD CITY (TWS Sum 46), THE MAN IN THE IRON CAP (SS Nov 47).

Bradbury: PROMOTION TO SATELLITE (TWS Fall 43), THE IRRITATED PEOPLE (TWS Dec 47), THE SHAPE OF THINGS (TWS Feb 48).

Brown: LEGACY OF MURDER (ExMys 1:1), I'LL CUT YOUR THROAT AGAIN, KATHLEEN (MysBook Win 48), A VOICE BEHIND HIM (MysBook Jan 47), OBIT FOR OBIE (MysBook Oct 46).

Whitley: ONE CAME BACK (TWS Fall 45).

TRAVELER'S TALE (SS Jan 47).

Heinlein: COLUMBUS WAS A DOPE (SS, May 47).

JERRY IS A MAN (TWS Oct 47).

That's the idea, do with it what you will. Frankly, if there's anything I can do toward realizing my idea, if you decide to adopt it, consider my services offered. I take rather a paternal interest in the project.

And a further suggestion: How about a biographical sketch in each of the collections?

And a point: Wouldn't it be perhaps cheaper, because although you'd still have to pay the authors for the use of their material, you wouldn't have to pay yourself?—Route #2, Box 24, Redlands, California.

We're dreaming too, Sam. And perhaps, some day in the reasonably near future, we may achieve at least partial reality. Unfortunately Popular Library is currently booked far ahead—but that won't last forever and, needless to say, plans such as you offer are already under discussion.

Braid your toes and keep the old fingers crossed.

Re your title suggestions—for Kuttner, how about the Hogben series in TWS and his riotous BETTER THAN ONE in one of the final issues of CAPTAIN FUTURE? Hamilton's file is too large for discussion here and now. As for Leinster, don't forget the two sequels to THE DISCIPLINARY CIRCUIT, THE MANLESS WORLDS and THE BOOMERANG CIRCUIT. Also THINGS PASS BY, POCKET UNIVERSES and many others.

We are rapidly assembling an increasing number of Bradbury tales, many of them not yet published. And we have done our darnedest to start him on a novel, which we hope he is working on. It should be an interesting experiment and, if successful, an epoch maker.

As for Brown, don't omit **WHAT MAD UNIVERSE** (SS, September, 1948) **DEAD MAN'S INDEMNITY** (*Mystery Book Magazine*, which appeared in book form as **THE FABULOUS CLIPJOINT** and won him an "Edgar" from the Mystery Writers of America last year) and **THE JABBERWOCKY MURDERS** (*Thrilling Mystery*, Summer, 1944).

Yes, when the time comes, we'll have a rich treasury to delve into.

## AND NOW HE'S HEP! by Marvin Williams

Dear Ed: This Arthur Clarke is a hep character. I liked **AGAINST THE FALL OF NIGHT** all over the place. It was pretty nearly as good as the **VALLEY OF CREATION**. I've said it before and I didn't get printed, and I'll say it again and hope it does.

**THE VALLEY OF CREATION WAS THE BEST STORY SS OR ANY OTHER STF MAG IN CIRCULATION HAS EVER PRINTED—see?**

Now I know there'll be some who will laff at this and mentions lots of others that were better, and I know that I have only been reading stf in pulp form for four years, but I can't possibly see how anything could be better. Anyway, I'm going to have that issue of SS cloth bound so that it will hold together longer than most of the mags. I can't think of that story falling apart.

Second in the November issue, was MacDonald's **RING AROUND THE REDHEAD**. I was nauseated by the illo', but the story was slicker than a Martian's earlobe. Really classy.

I couldn't catch hold of the interest fiber in the **ISOTOPE MEN** to save my . . . . Ahem. It didn't seem to have what it should for a hall of fame yarn.

As for the shorts, needless to say **THE VISITOR** was good. I'm just realizing that Bradbury never writes a bad story. I am getting to the point where I just know that I'm going to like the yarn even before I start to read it.

I'd like to give Ray a free plug on your time here if you'll permit. His **THE WOMEN** in a competitor of yours was something to rave about. Zowie! What a weird enchanting story! It mildly hinted that when a man drowns he is drawn by the beauty of the sea into his death. That is bosh, of course, but the yarn was still good.

Give the old kitchen clock to Astra Zimmer. Zimmer is zimmering with gas this time. It was a good issue, the July, '48. It was infinitely better than this one.

I think that winds up this little session. I can't think of anything to slam at so I guess I'll have to close up and get to other things.—1431 2nd Avenue, S.E., Cedar Rapids, Iowa.

Could it be that you have a bit of the wolf in you, Marvin—what with your expressed devotion to the Hamilton wolf-yarn? Seriously, we liked it too or we'd not have bought it.

## CLEANLINESS IS NEXT TO— WHAT? by Bob Farnham

Dear Editor: I have just finished **Against the Fall of Night—Clarke. WHAT A STORY! WHAT A STORY!** I was taking a bath when the wife handed me my issue of **Startling Stories**, and I sat in that blasted tub for 2 hours till I finished the story! Where did you find this Clarke? He rates on the same level with Hamilton and Brett Sterling, who did the Captain Future tales. I sure hope you have Clarke again—and read soon too! I am going to excerpt Clarke's story for my collection.

[Turn page]

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I can make no comment on the other stories. They were all of such a high grade that to comment on them would be superfluous.

The cover was not too bad either but Bergey should have put a sweater on the gal too. Some gals are cold-hearted, but they need clothes as well as any one else. Not a bad cover at all!

All in all, Ed., a siam-bang perfect issue—1139 East 44th Street, Chicago 15, Illinois.

'Tis a good thing you didn't drown, Bob, or Bergey would have had no defenders at all—to speak of, that is.

## SEARLEY by Bill Seales

Dear Editor: This is probably too late to be printed, but I don't care. I had to write you about that marvelous story "Against the Fall of Night". I think it is the best thing SS or TWS has ever printed, not excepting Kuttner, Hamilton, etc.

In fact, you seemed to go all out this issue. A super-duper HoF story—"The Isotope Men" will shut up those people who want to get rid of the HoF., I bet. The shorts were good, too, except—"The Stubborn men". And Bradbury has done better. As for Van Vogt, he's no favorite of mine, so n/c.

Even the cover was good, except for two minor points: (a) She doesn't look old enough to have a von of (???) years. (b) Alvin looks more like a dwarf than a boy. Sideburns, yet!

While reading a '44 SS, recently, I found only two names in TEV that I recognized. Chad Olive and Joke. Wonder where all these people will be in '52?—617 57th Street, West Palm Beach, Fla.

The "she" in question evidently had a few futuristic beauty secrets at her disposal. As for your where-are-the-snows-of-yesteryear query aent fan letter writers, we've wondered about it too. The turnover, during any one year, is pretty heavy. And they seldom if ever come back once they've strayed from the fold. However, new epistleers keep cropping up to take up the slack.

## PERTH OF THE MATTER by Roger N. Dard

Dear Editor: When the war ended and I had an opportunity of seeing the post war science fictionazines from the U.S.A., I was very disappointed, for with one exception, I felt these magazines were far below the standard of the pre-war days. The one exception was STARTLING STORIES, which I found every bit as good as it had ever been, although much slimmer in size—presumably due to paper shortage. I will not comment upon recent stories I have read, as I am afraid my comments would be dated by the time you receive this letter. I will say this however, your Hall of Fame reprints are the goods—in fact I would like to see one issue a year, or even quarterly, devoted entirely to reprints. How about it, Sarge?

Just one complaint, Mr. Editor—why on earth don't you get your grand magazine onto the Australian market? I personally have no kick, as I get STARTLING from a friend in the U.S., but there must be thousands of potential STARTLING fans in this country, who have never made the acquaintance of your prozine.

In conclusion I would like to say that I will always be glad to hear from stf fans everywhere.—232 James Street, Perth, Western Australia.

You'll probably be hearing from the Sydney Futurians, who are a highly organized fan group, Roger. As to our Australian circulation, we don't know just what the hitch is or who's causing it. But they seem to get

us in Sydney. Let's hear from you again. And why should your comment be dated? Aren't you a day ahead of us?

## NEWSSTANDIA by Wilkie Conner

Dear Editor: The November issue of *Startling* was a bit late reaching the muddy shores of Gastonia—probably because the local newsdealers are disinterested in their wares and don't care whether they display anything except comic books and kindred stuff. So the really readable literature gets a back seat.

I can think of only one newsstand in town that gives a hoot about giving proper display to the s-f and fantasy publications. Only one newsstand and one drug store that give proper display. The rest wait until there is a break in the comic book display, then put them out. However, all of them were late this time in receiving and displaying dear old *Startling!*

Speaking of newsstands, besides a dozen drug stores, there are half a dozen full time newsstands in uptown Gastonia. Of all the other s-f books published, only SS and TWS are available on all of the racks! It is possible to buy the others from time to time by skipping around town and hunting them up, but SS and TWS are available—eventually—on EVERY stand. Which is a compliment to your quality. Most of our magazine dealers handle regularly only those books that sell best. Since SS and TWS are available everywhere, they must sell better than the rest!

Oh, yes! That title you hung onto my letter in the November issue: **THE CORN BELT!** So my stuff is corny, eh? Listen, twerp, if I knew a good lawyer, I'd sue you for that slander. Corny, my aunt's wig! A pox on you, sir!

A. E. Van Vogt's *Dormant* wins the cigar in the story race. Next is *Humpty Dumpty Had A Great Fall* by F. B. Long. Third place goes to the novel, *Ray Bradbury's The Visitor* rates number four. The others are tied for fifth place.

With their increased length, the HoF stories are improving. I would like to see some more of Kutner's early stuff. Some of it I missed and I would like to read it.

On to TEV: Still no pic of "Astra." Guess we'll have to be patient, all we "banning Paganinis." I agree with Ed Cox on the possibility of using s-f in the Popular Library series. There are many, many long novels from SS and TWS that could be expanded to make interesting reading in that series. For instance: "When New York Vanished", "The Infinite Moment". There are dozens. You name 'em! Glad to see more ladies getting into the act. Love those gals!—1618 McFarland Avenue, Gastonia, North Carolina.

Hereafter, suh, we shall refer to your more barnyard products as maize. And that will have to do.

## WOT—NO BLASTERS? by John King

Dear Ed: It took a combination of events to stir this SF fan from languid spectatorism (hal) to a feeble attempt at letter writing. Bergey's cover outdid itself—it should win first prize in any poster painting contest.

The lead story . . . ah, that lead story! At last a modern writer who can turn out a story that brings back the old days when even the writers of science fiction seemed to be searching for well for something. With the story still warm in my mind, I can't recall a single blaster blasting someone, or even one little atom bomb atomizing a city.

When they get "Against The FON" into book form, you can be sure that I'll be right up there at the head of the line to get my copy. Orchids to Mr. Clarke and to the thoughtful Ed for getting a hundering for the mag.

The illustrations were very good (I guess they were by Stevens—rule of thumb: if it looks like Flinlay it must be Stevens), the only complaint—not enough. There were a few other scenes that would make darn good pics. Oh well, let it pass. I feel too good to argue.

[Turn page]

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I'm glad I read AFTON last, because there were a few smellers in the issue. "The Stubborn Men" . . . . . ough . . . . . they must have been stubborn to get you to print that. At least it gave you a bigger table of contents.

Humpty Dumpty, though discouraging of title, wasn't as bad as expected . . . . . came close, though. (Finlay waded into that one).

Glad to see Van Vogt in SS. Not up to par with Dormant, sorry to say. He must have dashed this off before his morning dose of (coffee, soma, cocaine, zeno, Ex-Lax), whichever he uses.

"Ring Around the Redhead" . . . . . pardon me while I turn the page, as Victor Borge says.

The HoF selection was better than usual, but I still can't figure out the connection between the story and Finlay's pic. Not that it matters much of course. Finlay can do no wrong.

"The Visitor" was excellent and the more of Bradbury I read, the more convinced I become that he is the most original of the Sf short story writers. Let's see . . . . . more of Ray.

"The Unspeakable Melch" was immature in execution. I had come to expect more of the MR series, but maybe Vance will buckle down.

And last on the list comes TEV. This is one section on which no comment should be made, since it is all comments. But I would like to know where I can get a large magnifying glass so I can read the darn things.

If the rest of the new issues are as good as this one, as a whole, though, you'll be hearing the merry tink of my quarters at the old newsstand for a long time.—1608 Jerry Lind Street, McKeesport, Pennsylvania.

Very nice, very nice indeed, John. Let's hope we hit the combination again, both soon and often.

## OMIGAWSH!

by Frances Keysor

Dear Ed: I don't think I'll send you a poem this time; you worry too much about meter and rhyme. We all do the amateur best that we can while you sit and mumble "I amble and scan!" I'm high in the hills amid the oaks and the pines where the scenery's unmarred by billboards or signs. Six trips to the city without much success, ten miles by grape-vine plus seven, no less! I come back down-hearted and with empty hands, just when does this — — — Mag hit the stands?

Aha, and oh joy, when I'd given up hope, I finally discovered my favorite dope! And there was the cover with Bern, Guy and Gal, with colors all flashy, intended to sell! (?) Now I'm sure that Bergy does not mean to bore, but just where have I seen that blond babe before?

As usual, first I read TEV. A quarter for Sneary's nice words about me! I laughed long and loud over Schamburger's slip, and I say to you, Joe, better luck next trip! This guy, Halliburton—off with his head! Or better yet, rattlesnakes put in his bed! He says "NO more letters," then why does he write? I'll bet his framed art he reads it all night! A pox upon Wilmot and his prattling letter! We "prattling females" can prattle much better!

So now to the stories; for better or worse, I'll try to berate them in my limping verse.

Fanfare and trumpets! And hip, hip, hooray! Salut, skoal or bravo, as others might say. All this I thought (as I read with delight) of Clarke's super tale "Against the Fall of Night." Such beauty in words so seldom is found. 'Twas like majestic breakers crashing the sound. The plot, it was feeble, but not to distraction; it still held me spell-bound down to the last fraction. No love interest there—so Wilmot take heed. No "prattling females" and none did it need.

Mr. Frank Belknap Long sure drew a big blank, for his "Humpty Dumpty" most certainly stank! I've loved Mother Goose for these many long years, and he paints a picture of cruelty and tears!

Now the HoF story rates a big "Whee!" for accurate predicting in '33. The rest of the Mag's like the neck of the chicken with nothing much there and not worth the pickin'.

By now, my dear Ed, I'll bet you are fuming: your eyes nicely crossed, your brain-matter booming. There, there, my dear fellow, why couldn't you guess

that sooner or later would come such a mess?—Berry Creek, Calif.

We can only remark to Miss Berry Hill, in passing as 'twere, that she's quite a Jill. "Iambic and scan"—anapaestic indeed is the beat of this meter to those who give heed. Her critiques are sharp though her prattlings are shrill but the quarter she paid was raked in at the till. However, when taking the editor's view, a poor point of vantage that's slightly askew, we're really unable to say which is worse—whether Frances should write us in or out of verse.

## DOWN UNDER BRIEF

by H. L. Stapleton

Dear Sir: To hand the August issue of Thrilling Wonder Stories and the September issue of Startling Stories. These have now been duly read and I have been duly thrilled with wonder and duly startled. Thank you.—30 Hatrick Street, Wanganui, New Zealand.

Sounds like a dule existence. Write us again at greater length, man.

## A PALM FROM PALMER

by Rodney Palmer

Dear Editor: The quality of Startling has improved so much in the last year or so that I've been haunting the stands days and weeks ahead of time trying to catch a coveted glimpse of the revered title. When the great day finally arrived, had to fight my way past a horde of horror story fans and it was with very little surprise I discovered we were battling for the same magazine. That cover again.

But seriously, this time it wasn't so bad at all—the one-eyed robot with entwining tentacles brings back a nostalgic memory of happier days when authors were content with half-a-cent a word and circulation was sacrificed to cover-quality. Oh well. And I may well repeat: The cover this issue, in the old tradition, was okay.

Now I have what might be considered a new approach to the old question "What makes the science-fiction fan read science-fiction, and in such large doses?"

I would myself consider the fan a chronic worrier, with what may or may not be an over-exaggerated opinion of the importance of his actions upon future events. Thus constant assurance is required that the future bodes little ill, that when one door closes another opens, that everything turns out for the best and, in other words, that what he does will in the end affect the world cataclysmically, yet not detrimentally.

We differ perhaps from the average fiction fiend in our more extensive ability to picture the far flung havoc which we in our little daily lives are bound to cause just by living. There must be a psychological word for it, and though I may be wrong the concept is worth the average fans' considering.

Beyond the cover this month we find the possibilities of a super issue but we cannot be sure. The opening chapters of Arthur C. Clarke's novel look good. Bradbury's usual travesty on science-fiction must needs assume first place withal on merit of pure genius combined with craftsmanship. The man has no conscience, the way he takes old themes long in disuse, other authors having discarded them as sused dry of potentiality, and creates a work of art. It is the way of change.

I've already read six of his stories which dealt with nothing more, in essence, than "the first landing on Mars" and they were all epics. What more can be said... He at least proves that the fringes only of science fiction plotting have been touched. A laurel to him, though his obviously troubled outlook makes me wince.

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Robert Moore Williams is disappointing this time with THE STUBBORN MEN, though he has an idea there worth expressing. I think most fans will agree Bob does best on longer stories—I still wait patiently for another WORLD BEYOND THE SKY. Jack Vance improves again with Magnus Ridolph and THE UNSPEAKABLE MC'INCH. What happened to the Vance who wrote THE WORLD-THINKER? It's a tough deal, swallowing Ridolph (who makes fairly decent filler) when, from that first novelet, we expected great things.

On that Fem-Fans-in-science-fiction business: The girls are fun to have around, supplying as they do the social-amenities necessary in any gathering. Their opinions, though always a puzzle to me, are interesting to read, and least of all would I have them discouraged from writing in. But an attempt to please both audiences in a single story is bound to weaken the yarn from both sides. Dividing the mag equally is about the only answer, but not dividing the story. And so we sign off.—226 West 60th Street, Chicago 21, Illinois.

Your description of your conception of the average (whatever that is) fan makes him sound like a prospective megalomaniac. Which could quite possibly be correct. And which is quite all right with us, who find sanity a dull thing at best.

## MORE LOVECRAFTANIA

by Mrs. Muriel E. Eddy

Editor Startling Stories: I've been so interested in the many letters re: Lovecraft. Here in Providence, R.I., folks call me an authority on Howard Phillips Lovecraft, because my husband and I knew him intimately for many years. We were aware of his many idiosyncrasies and we loved him!

We knew he was allergic to fish—so we never served him fish or any sea food! We knew he enjoyed the white baked meat of chicken—and cheese. He loved chocolates and when he married Sonia Greene in 1924 his two aunts gave our children over 100 empty chocolate boxes to play with! (In fact, a bathtub full!) We used an old gas-plate Lovecraft formerly brewed his coffee on, for a long time.

We remember how dearly this famous author of the weird and uncanny loved coffee with many spoonfuls of sugar! Many a night we listened to Lovecraft reading his original manuscripts—and enjoyed the facial expressions that played over his unusually mobile features as he read aloud with many a theatrical gesture!

I'd be glad to furnish readers with any information on Lovecraft I am able to—and in the meantime I'll just say I do enjoy "STARTLING STORIES" and the November issue was EXCEPTIONALLY fine! I LOVE your illustrations and covers!—125 Pearl Street, Providence 7, Rhode Island.

Which reminds us a little of Dunsany's satiric short play—"Fame and the Poet." And something about that bath-tub crammed with empty chocolate boxes gives us a sort of post-diabetic sensation. But Lovecraft fans may copy at will.

## NO JIBE

by Ed Cox

Dear Editor: It seems that I had hardly finished writing a letter to you about TWS and along comes the new SS. As good as having a monthly magazine!

The cover is puzzling. It doesn't quite jibe with the story in that it is a grown man being taken (?) away and that the woman seems to be joyful because the robot is depositing him! See?

It is trivial, however, so now I'll commence to rave about the wonderful AGA-NST THE FALL OF NIGHT. A really entertaining story and a bit thought-provoking too. There is so much I'd like to say about it but



It would take up too much space and then there's the rest of the magazine too. So, thanks to you and Clark for it!

Robert Moore Williams' little yarn is sobering. Just start to think of how little we really know about the atom and enlarge upon that fact with the frightening possibilities from this story.

What's come over Frank B. Long? This is wonderful! Another one of his "children" stories, yet in a manner much different from Bradbury's. The writing could be termed "deliberate". Or so it strikes me the way he twists the Mother Goose stories into this striking fantasy. More shouted the multitude!

It is with unbounded joy that I see my favorite of favorite authors, Alfred van Vogt in SS' DORMANT (which is much better than "The Third One" and "Tiah") is typical Van! That heart-stopping ending! Wow! I can hardly wait for "The Weapon Shops of Isher" in TWS! I hope he'll be appearing steadily now!

RING AROUND THE REDHEAD was a very enjoyable story. I like MacDonald's writing very much and this is the best yet! More!

I can now see and appreciate what you said about giving the Hall of Fame more space so we can have better stories. Pragnell's story was quite good. Didn't seem a bit dated in content or style. Illustration is irrelevant to the story. One confusing thing in the story is that the planet was always referred to as "Earth" with such happenings and places as WW-I and New York mentioned.

It detracted from the story since it is almost impossible that history would repeat itself detail for detail on this planet. Or was the narrator using examples from Earth while telling of the planet that exploded? Or what? Was good reading just the same.

THE VISITOR is typical Bradbury. I am now in the stage where acclaiming his stories is superfluous so I just read and enjoy each one that comes along and I'm satisfied.

Now comes the current rave, Jack Vance and his Magnus Ridolph, detective extraordinary. I like this new series and it is by far the best series since "Kim Rendell" and before that too! I only hope Jack can keep them coming as good as they are as they've kept an admirably high level in quality so far. Glad to see one is slated for the next issue.

The logic in this one is a pleasure to contemplate. Vance thinks up all manners of strange creatures and then builds up an indisputable logic around them, weaves it into a detective-story which, taken all together, is pretty darned good writing and reading! Ha can't lose! Neither can we!

Pics were all good this time. Finlay and Stevens really good and Napoli not so bad when he has a two-page spread to work in.

Say, I had been wondering what you might have cooked up for us for a Tenth Annish of SS. No special plans huh? But it will probably be a top-flight affair as they all seem to be nowadays. Darned good work and I hope you can keep it up. I'm not worrying any! It was a long letter-section this time and, as usual, it was the first thing I read! I see that William Thiesen has also thought of stf anthologies in POPULAR LIBRARY. It was Jimmy Taurasi's idea originally and I spoke of it in my letter in the October TWS. I hope everyone will support this idea, as there are still plenty of good stories left from them their old mags.

Oh, just Don and I live at 4 Spring Street. I mean, just the two of us are brothers. My Mom reads every issue but won't write. Well, Sheldon isn't a pen-name huh? From me. I got it. Which one is your pen-name? You write lots of tennis stories for the sports mags but not enough stfiction.

Why the anonymity? Most eastern-area fans know you and many more, so why the secrecy? Your mask is pretty well in tatters!

Nice long fanzine review. I see TRITON did make the A list. Watch for #2 TRITON and #1 OPEN STREET soon. Hope you like 'em.

Book reviews good as usual. Haven't read either hook yet but will take your word for it!—4 Spring Street, Lubec, Maine.

Glad you like Magnus Ridolph, especially as he came in for quite a fan-pasting until the SUB-STANDARD SARDINES. We found the series entertaining all the way or we would not have recommended same for purchase.

[Turn page]

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A series can be an editorial as well as a writer and reader headache. The Orig Prem-Benj. Miller series we have been running in TWS of late is a prime example. Miller sent in the first, which we bought and, in buying, suggest he develop into a series. So he sent in the next three in a batch. The third and fourth stories were howlers but the second was weak. Yet the yarns were so interlocked that we could not run three and four without running two.

Result—much consumption of aspirin all around until Miller could get the second one into workable shape. However, we have had no such technical difficulties with the Ridolph series, for which praise Allah and Vance, who may or may not be his prophet.

## AYES AND NEIGHS by C. Ronald Wagner

- Dear Ed: Five things have I to say:
1. Throw out the Hall of Fame (all it has been is a Hades of Fiction). Fans make their own Halls of Fame anyway.
  2. **STARTLING STORIES**, March 1948, The Ether Vibrates, Wanda Reid: Why condemn Merritt on a single reading? Kuttner has written junk, too. Try Merritt's **SEVEN FOOTPRINTS TO SATAN**.
  3. I made a mistake, Ed. I had a basement full of STF. I selected just the brilliant stories, took them from the magazines, trimmed the edges, set them in folders and placed them on my book shelf. Now I have the best 28 stories ever printed in STF (my opinion) but, frankly, I am haunted by some of the good stories I had to sacrifice. However, take pride in this, Ed: Only two stories made the grade in 1947 and both were from **STARTLING**: Kuttner's **DARK WORLD** and Hamilton's **THE STAR OF LIFE**.
  4. Glad Leigh Brackett is coming back soon. She has no story in my files but I remember one I sacrificed—**THE VEIL OF ATELLAR**.
  5. Glad you opposed E. J. Frost's plea for turning your magazines into reprints.—835 North Lombard Avenue, Oak Park, Illinois.

How come you missed Brackett's **SHADOW OVER MARS**? That was a mighty fine and exciting job all the way. Hope you like future Hall of Fame stories better than those which give rise to your take-it-off squawk.

## HOW DO YOU DO? by Michael Wigodsky

Dear Sir:

**STARTLING** is new  
How do you do?  
**STARTLING** is better  
This is my Letter

Best of the stories, naturally, was the novel, Britisher Clarke has written a suspenseful, surprising, satirical, sincere and in other ways magnificent story.

Secondly surprising is the quality comeback of old Hacktuff FBLONG. His Mother Goose tale is the finest piece of fairy-tale brutality since **MIMSY WERE THE BOROGOVES**.

Thirdly on **STARTLING**'s November hit parade is **THE VISITOR**, which, needless to say, would be first and then some in most issues. This surpasses even **AND THE MOON BE STILL AS BRIGHT**, which was based on a somewhat similar theme. Why, it's even better than **THE HOMECOMING**. In fact, it's better

than any of Bradbury's tales you can mention except perhaps THE SCYTHE. If any of you who read this don't agree with me, get out the story and reread the penultimate sentence. (Incidentally Bradbury seems to produce almost as much as Kuttner.)

Then comes Jack Vance, with another ingenious trifle 'a' Ridolph. His titles are perfect for INTHE-NEXTISSUE forecasting, because they never tell anything about the plots.

After a long leap over one of the brooks of Looking-glassland, we come to vanVogt, whose DORMANT is a weak rehash of a shortstory called DEFENSE and he doesn't deserve it.

In sixth place, as usual, is John D. MacDonald. His story drops sentiment, the hero is so much of a fool at his trial that I can't believe he even had sense enough to put his hand instead of his head through the 'gawk', and the last paragraph seems to infer that everyone has a body in the garden, as well as a unicorn.

In seventh place is THE STUBBORN PEOPLE. This story is well written and believably characterized, but it irritated me for some reason. Seventh place.

Last and certainly least is the hallofamer. It was readable, but despite its "epic scope" it seemed so trivial that I had to concentrate to remember there was such a story in the magazine.

Since my last letter was published, I got a letter from David Lesperance, commenting on last paragraph of my letter as scrambled by your drunken typesetter. He says he was talking about somebody else. I'll answer him eventually in private correspondence, but this to apologize in public. Thank you.—7744 Ridgeland Avenue, Chicago 49, Illinois.

Michael, Michael, quite contreary

Your spelling rivals that of Sneary.

It makes us look at you askance

But we'll forgive since you like Vance.

ZOWIE!

by Aubrey Carruth Jr.

Dear Editor: Without a doubt this is one of the finest issues of Startling Stories ever published. The Arthur C. Clark novel was far above average.

The Hall of Fame section was good and promises to become even better. Of course the novel, "Against the Fall of Night" by Clarke, was the best story in the zine. In fact, the excellence of the novels in recent issues, ("What Mad Universe" by Fred Brown in Sept. Clarke's effort in Nov. and "The Time Axis" by Kuttner in Jan.) have been the reason for much of the fans' new-found jubilation.

I for one am glad about the addition of A. E. van Vogt as one of your writers. With a fellow like that writing for you, you are bound to come up with a great story now and then. His Dormant in this issue was no classic but it was a good short, as was Bradbury's "The Visitor". As usual Magnus Ridolph wins out, but it always proves interesting reading.

Hoping that the good quality of S.S. continues I will now sign off. Be seeing you next ish.—307 East 89th Street, New York 28, N. Y.

We'll be looking for you, Aubrey, and only hope future issues strike you as warmly as have those you cite. And now, so long, all, until next month, when our companion magazine THRILLING WONDER STORIES hits the stands with what we hope will be another fine issue. It should be, since it has novelets by Hamilton, Loomis and Bradbury. Until then—adieu.

—THE EDITOR.

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**REVIEW OF THE SCIENCE FICTION FAN PUBLICATIONS**

**VERY** once in a while someone sends us a magazine that, only by the most extreme stretching of the connotative belt, has anything to do either with science fiction or science fiction fandom. This time the publication in question is entitled **THE PSYCHIC WORLD**, which is "Dedicated to the unveiling of the mysteries of mind."

A professional job, published by Charles W. Miller at Suite #1102, 210 Fifth Avenue, New York 10, New York, it goes in heavily for the Hindu and other fetishes and belongs on



that crackpot fringe of the occult which we firmly believe, caters only to the maladjusted and unstable.

*Om mani padme hum.* Ho hum.

Far less tangential is a **FANEWS PORTFOLIO**, a collection of select fanzine covers and picture pages from former **FANEWS** annuals. Put out by Lorraine Dunkelberger (Dunk has been laid low with a succession of illnesses) of 1443 Fourth Avenue South, Fargo, North Dakota, it contains material that is bound to be pleasantly nostalgic for many veteran fans as well as of absorbing interest to newcomers in the field. An all-around good job.

Another arrival worthy of special note, although it too has little relation to the main fanzine stream—although it calls itself a fanzine—is a tremendous antological achievement called **THE FABULOUS FAUST**, first in a planned series of such publications whose purpose is to tell us just about everything there is to know about the late Frederick Faust, otherwise Max Brand, better known for his westerns and his Dr. Kildare series

than for fantasy and science fiction, although he did write a number of works along the latter lines.

The "fanzine" contains articles and statistical treatises about Brand and his work, excerpts from many of his writings, eulogies composed after his death and a number of his old book jackets. Priced at 50¢ and worth it, **THE FABULOUS FAUST** is published by Faustophile Darrell C. Richardson at 6 Silver Avenue, South Fort Mitchell, Covington, Kentucky. We're looking forward to the second issue.

And so to the A-listing, which looks pleasantly solid this time out and contains a number of fanzines which have not previously appeared in these columns.

**CENSORED**, 79 Hudson Avenue, Town of Mt. Royal, Montreal 16, P.O., Canada. Editor, Fred Hurter, Jr. Published irregularly. 15¢ per copy.

Canadian capers attractively presented with T. A. Bauer, Gerry Williams and Bert Joss handling the fiction (wanted, one clothespin) and articles contributed by Sam Trenchard, Leonard Ashley and Les Crouch. Trenchard's piece on the building of proteins struck us as most worth while of the list.

**CHRONOSCOPE**, 2215 Benjamin Street Northeast, Minneapolis 18, Minnesota. Editor, Redd Boggs. Published quarterly. 15¢ per copy, 2 copies 25¢.

A neophyte we hope is here to stay. The well-balanced contents page lists articles by Dr. Keller, Brazier, Kennedy, Paul Klingebiel, Art Rapp and Lilith Lorraine, truly a distinguished list—book reviews by Spencer, Tigrina and Wilson—and poetry by Genevieve Stephens, Lilith Lorraine and the Zimmer. A distinguished and provocative list with Keller's "five-book" selection for desert-isle reading, Joe Kennedy's informative and occasionally hilarious analysis of prozine covers just barely coming in ahead to avoid a dead heat with the others. We sincerely hope Editor-Publisher Boggs can keep up this quality. If he does he'll have a fanzine all-timer.

**THE FANSCIP**, 3435 NE 38th Avenue, Portland 13, Oregon. Editor, Donald B. Day. Published quarterly. 15¢ per copy, 50¢ per year.

Illuminated by Kuttner's description of the collapse of **FRARED TALES** and **GEARED TALES** in 1958 and a profile on Dr. Keller, the first anniversary issue of this nicely printed but microscopically-sized fanzine is also top hole. Artwork and offset printing make it legible despite its smallness and, among the other contributions, Thyri Ladd's brief essay on George Allan England and Eric Atlas' book reviews are especially worthy of comment.

**FANTASY-TIMES**, 101-02 Northern Boulevard, Corona, New York. Editor, James V. Taurasi. Published monthly. 15¢ per copy, 2 copies 25¢.

This East Coast newszine continues to develop and improve while still containing plenty of fanzine-splendour. Tom Gardner's prozine reviews of the year 1947 are, of course, especially interesting to us. A good job all around.

**THE GORGON**, 4936 Grove Street, Denver 11, Colorado. Editor, Stanley Mullen. Published quarterly. 20¢ per copy, 7 issues \$1.00.

[Turn page]

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Still just about tops among established fanzines with topflight artwork contributed by Roy Hunt, Archie Musick and John Grossman. Poetry, Toth, Pederson, Alvor and Stephens is above-average. Cynthia Carey's "The Paisley Shawl" is a haunting bit of fiction and two articles—Phil Rasch's analysis of the background of Merritt's "Face in the Abyss" and Paul O'Connor's essay on Lafcadio Hearn—could fit into just about anyone's publication.

IF, 705 West Kelso, Inglewood, California. Editor, Conrad Peterson. Published irregularly. 10¢ per copy, 6 copies 50¢.

Another promising newcomer, enlivened by a highly amusing satiric future autobiography by Dr. Keller and a ditto account of encounter with a Shaver fan and general high level of features. More.

OPEN STFIRE 505 Washing Avenue, Apartment #7, Portland, Maine. Editor, R. H. Woodman. Published irregularly. No price listed.

And still they come. This one, put out by the editor of TRITON, another fanzine, is strictly a letter-box and as such fills a long-felt need in fanzine opinion which has been missing since the demise of VOM. We're for it.

OPERATION FANTAST, Riverside, South Brink, Wisbech, Cambridgeshire, England. Editor, Kenneth F. Slater. Published quarterly. No price listed.

The British gang is out in force this time, in a big and sloppily printed job that should be of interest to all American fans. Their interests run a surprisingly close parallel to those of American fans. Slater's "Generally Chuntering" page packs plenty of stf gossip.

PEON, 2116 Edsall Court, Alameda, California. Editor, Charles Lee Riddle, PNI, USN. Published monthly. 5¢ per copy, 25¢ per year.

Poetry by Dr. Keller and others and a large letter department feature this well-put-out 'zine. However, its most intriguing fanfeature is a graph giving state-by-state numbers of membership in the National Fantasy Fan. A nice job.

SHANGRI-LA, 628 South Bixel Street, Los Angeles 14, California. Editor, Jean Cox. Published

## NEXT ISSUE'S HEADLINERS

### FLIGHT INTO YESTERDAY

A Novel of Tomorrow  
By CHARLES L. HARNESS

### CONQUEST OF LIFE

A Hall of Fame Novelet  
BY EANDO BINDER

## THE NEXT TWELVE YEARS

Special Feature by WILLY LEY

bi-monthly. 10¢ per copy, 3 copies 25¢.

Editor Cox has enlivened this recently fading flower of the Los Angeles Science Fantasy Society, obtaining an essay by A. E. van Vogt on Dynamic General Major Semantics as well as an interview by Ray Bradbury and a short short story by Major Reynolds, one-time SEPoster. The society records are as lively as ever and SL appears to have taken a welcome new lease on life after its recent doldrums.

SPACEWARP, 2120 Bay Street, Saginaw, Michigan. Editor, Arthur H. Rapp. Published monthly. 15¢ per copy, 2 copies 25¢.

Bill James, Dick Avery, Jim Harmon and Hal Shapiro contribute to the doings in this reasonably live issue—but Steve Metchette's essay on "ghost town" or forgotten prozines is top feature this issue. Artwork uniformly dire.

TRITON, 505 Washington Avenue, Apartment #7, Portland, Maine. Editors, Ed Cox & R. H. Woodman. Published quarterly. No price listed. Gray, de la Ree, Moleworth and Van Couvering contribute to this neatly conceived 'zine, along with the ubiquitous Dr. Keller. All 4-0 except for Jerril Bullock's cover, which looks like a partly carved roast beef—and we don't believe that was what Miss Bullock intended. Ray Nelson's cartoon amusing.

Well the A's have had it and come out quite gilded in the process. We can't remember a list that inspired more friendly critical comment. But all good things must end—so on to the B's.

BLOOMINGTON NEWS LETTER, Box No. 280, Bloomington, Illinois. Editor, Bob Tucker. Published irregularly. No price listed. Le Tucker gets his hand in again in modest but peppery fashion with reviews, gossip and observations of some Fortean phenomena. Here's hoping he finds time to build it into something.

The FANTOPOLOGIST, Bethalto, Illinois. Editor, H. T. McAdams. Published irregularly. 10¢ per copy. A Bull. [Turn page]



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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946, of Starting Stories, published bi-monthly at Chicago, Ill., for October 1, 1948. State of New York, County of New York, ss. Before me, a Notary Public in and for the State and county aforesaid, personally appeared H. L. Herbert, who, having been duly sworn according to law, deposes and says that he is the Business Manager of Starting Stories, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the act of August 24, 1912, as amended by the acts of March 3, 1933, and July 2, 1946 (section 537, Postal Laws and Regulations), printed on the reverse of this form, to wit: 1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, Better Publications, Inc., 10 E. 40th St., New York, N. Y.; Editor, None; Managing Editor, None; Business Manager, H. L. Herbert, 10 E. 40th St., New York, N. Y., 2. That the owner is: Better Publications, Inc., 10 E. 40th St., New York, N. Y.; N. L. Pines, 10 E. 40th St., New York, N. Y. 3. That the known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: None. 4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him. H. L. Herbert, Business Manager. Sworn to and subscribed before me this 1st day of October, 1948. Eugene Wechsler, Notary Public. My commission expires March 30, 1950.

session with Mr. McAdams doing all the talking.

KOTAN, Box No. 138, Lake Arthur, Louisiana. Editor, Gordon Mack Jr., Published irregularly. No price listed. Dr. Keller puts in a poem and Lin Carter does likewise about A. Merritt's "Creep Shadow". Artwork is fair, fiction insignificant.

the ROCKET NEWS LETTER, 91 Pine Avenue, Riverside, Illinois. Editor, Wayne Proell. Published monthly. 15c per copy. This once ambitious sheet is picking up again after a summer slump. Strictly for rocketeers.

SPATIUM, 584 East Monroe Street, Little Falls, New York. Editor, Harold Cheney Jr., Published monthly. 10c per copy. 12 copies \$1.00. Membership stuff for the Central New York SF Society and little of general fan interest.

the STFNATIC, no address listed. Editor, Hugh McInnis. Published irregularly. No price listed. Mostly fanfiction—that's all. Enclosed correction sheet more amusing than the regular contents.

WEIRD UNSOLVED MYSTERIES, General Delivery, Camden, New Jersey. Editor, John Chrisman. Published quarterly. 25c per copy, 4 copies \$1.00. Such Fortean phenomena as flying saucers are here exhaustively reviewed. Okay if you go for it.

Which winds up the briefest review in some issues (thanks to the absence of FAPA and SAPSazine mailings. On the whole, though, the 'zines were of unusually high quality. Let's hope they can hold to it. We'll be keeping them crossed.

—THE EDITOR.

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# SCIENCE FICTION BOOKSHELF

## REVIEWS OF NEW BOOKS

**SKYLARK THREE** by Edward E. Smith, Ph.D., Fantasy Press, Reading, Pennsylvania (\$3.00).

Once again Richard Seaton, his pal Crane and their two highly hirsute fraus roam the galaxy. Originally called into space to help their friend Dunark solve a couple of scientific problems, they again run afoul of villain Marc Duquesne, whose behavior is as rigorously evil as it is motiveless.

However, early in the course of their travels, our side runs afoul of some overgravitized



and extremely pugnacious citizens bent on conquest who go by the name of Fenachrone and whose various rays, screens et cetera would prove vastly superior to those of the Skylark crew were it not for Dick Seaton's unfailing ingenuity.

At that, Dick needs plenty of help to remove the peril of the Fenachrone from the spaceways. He gets it from the underwater porpoise men of Dasor and from a super-intelligent tribe called the Normalin, who make just about anything they wish by mental control of the atoms around them.

Dr. Smith's ingenuity is at least equal to that of his characters, especially Dick, who solves the unsolvable time after time with almost ridiculous ease. But, as in all the good doctor's volumes, the sweep of space and its alien inhabitants is always very much present.

If he could only give his characters the feelings and actions of real people he'd rate the very top of the heap. As it is, SKYLARK THREE is good fun if you feel like taking a

[Turn page]



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**SLAVES OF SLEEP** by L. Ron Hubbard, Shasta Publishers, Chicago, Illinois (\$3.00).

**SLAVES OF SLEEP** is fantasy pure and not so simple. Jan Palmer, a worm in human form if ever one existed, is the much-beset heir to a failing shipping corporation in Seattle. He is being robbed blind and lacks the character to get up on his hind legs and protect his own interests.

Then Jan is visited by a Professor Frobush, who discovers that one of his seagoing forbears has brought back a copper jug seal with lead bearing the mark of Sulayman. Jan refuses to part with it and, the following night, discovers the professor playing house-break and unstoping the seal.

Result—the escaping Ifrit, Zongri, king of the Barboss Isles, carves up Frobush with a handy kris, condemns Jan to eternal wakefulness and vanishes, leaving the bewildered young shipowner facing a murder rap for slaying the professor.

But Jan wakes up from a snooze in jail to find himself inhabiting the rugged and fearless body of a man called Tiger in another world aboard a ship commanded by Jinni in a world run by same. A reckless daredevil in his new incarnation, he begins to learn that caution is not always the best policy.

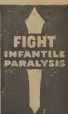
To tell more would be to give the story away. Suffice it to say that it is a delightful romp through a fairyland properly beset with hideous peril, coupled with returns to the prison cell from which it soon looks as if Jan will never emerge save to enter a padded cell in a lunatic asylum.

Hannes Bok's jacket design is one of the gayest we have seen in fantasy publishing. And rightfully so—for **SLAVES OF SLEEP** is a very gay and enchanting book.

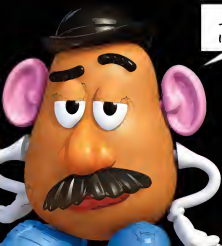
—THE EDITOR.

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INSIDE  
BACK COVER

A close-up, 3D-rendered image of Mr. Potato Head. He has a large, orange, potato-shaped head with a black top hat, thick black eyebrows, large white eyes with black pupils, a large black mustache, and a small red mouth. He has two large, pink, fleshy ears on either side of his head. He is wearing a blue collared shirt. His white arms are visible, with one hand on his hip. The background is solid black.

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